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VOL. 139 NO. 25 DECEMBER 17 1960 Price 1s. Weekly

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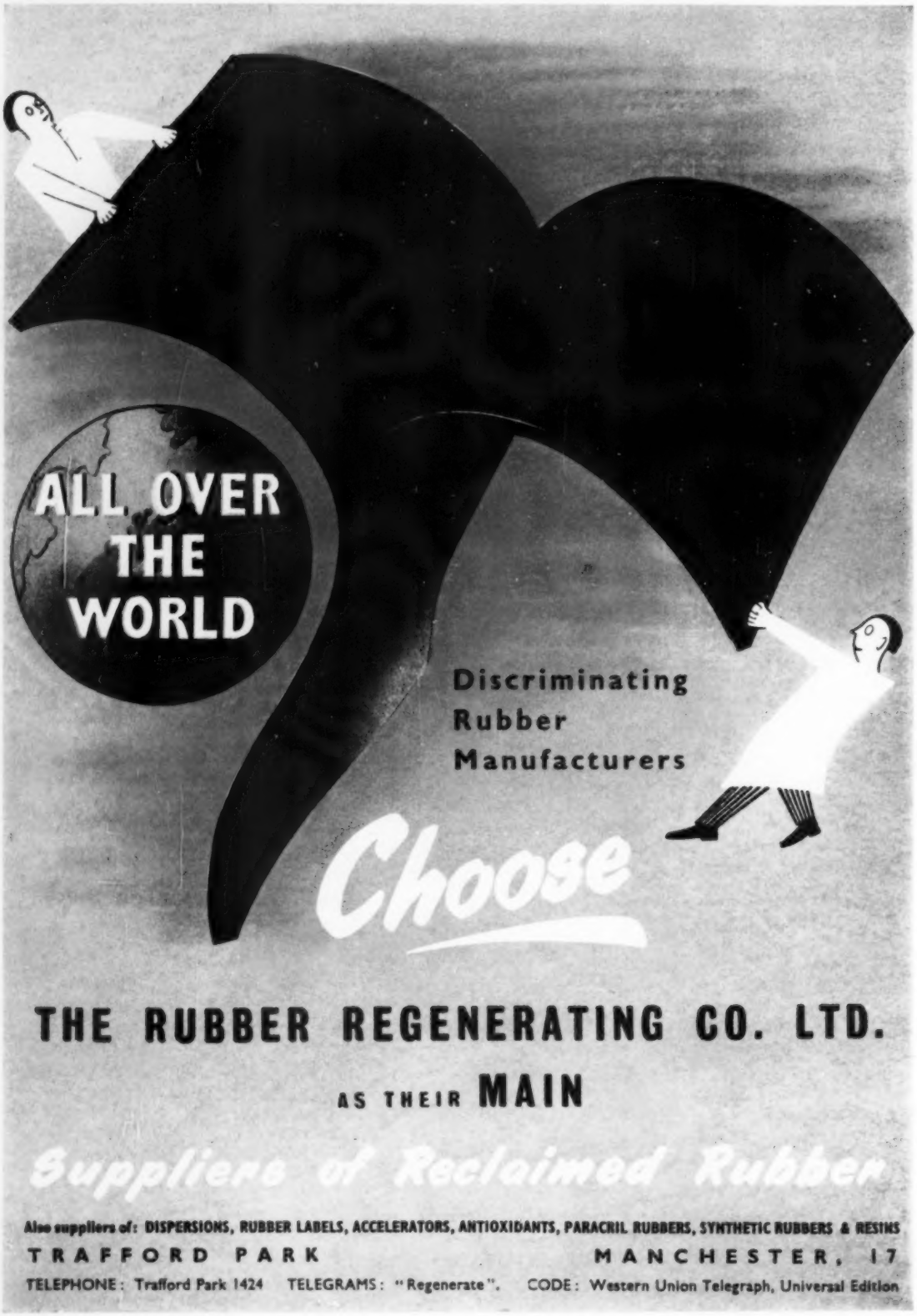
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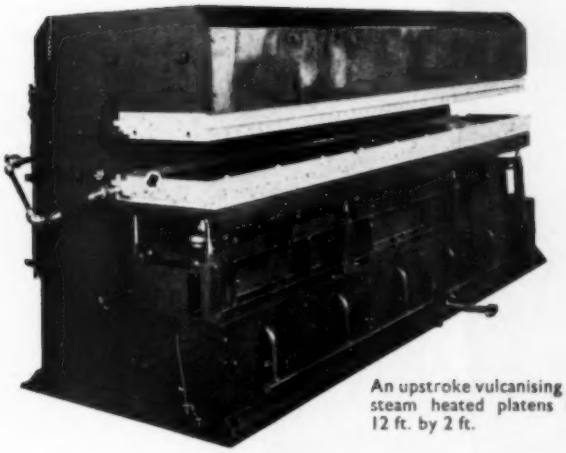
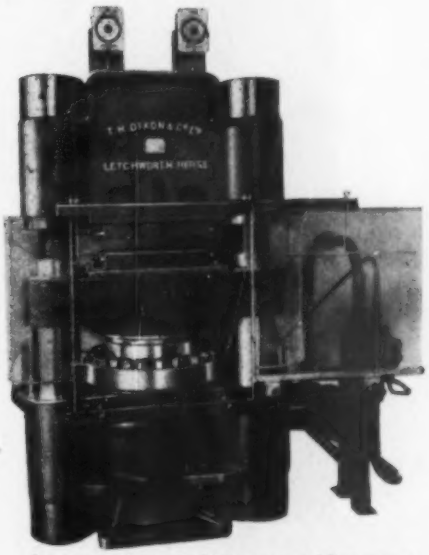
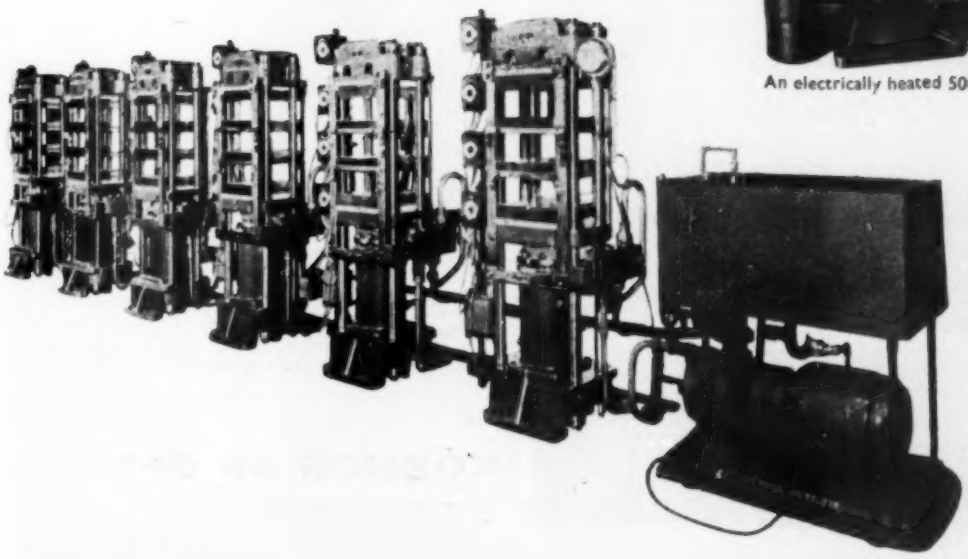


An upstroke vulcanising press with steam heated platens measuring 12 ft. by 2 ft.



An electrically heated 500 ton moulding press.



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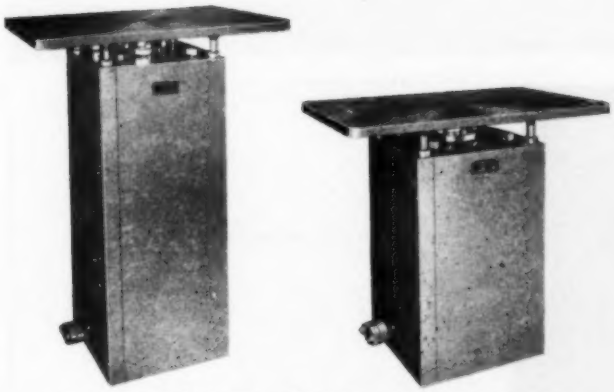

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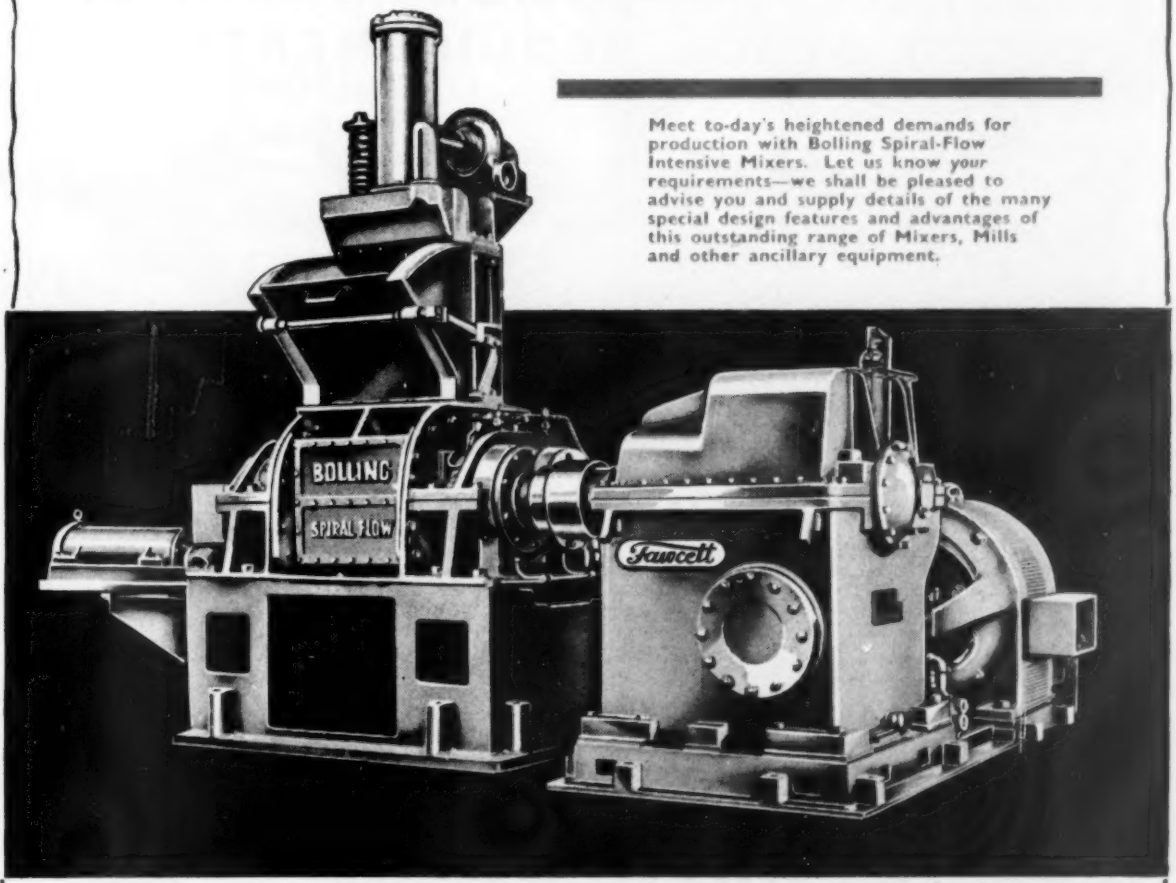

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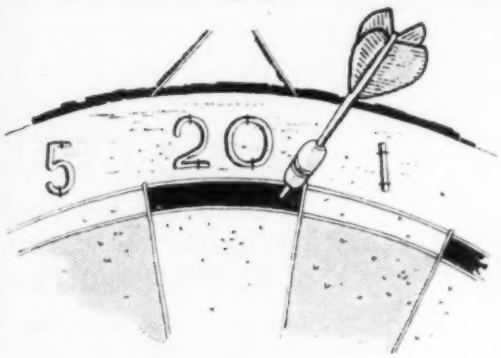

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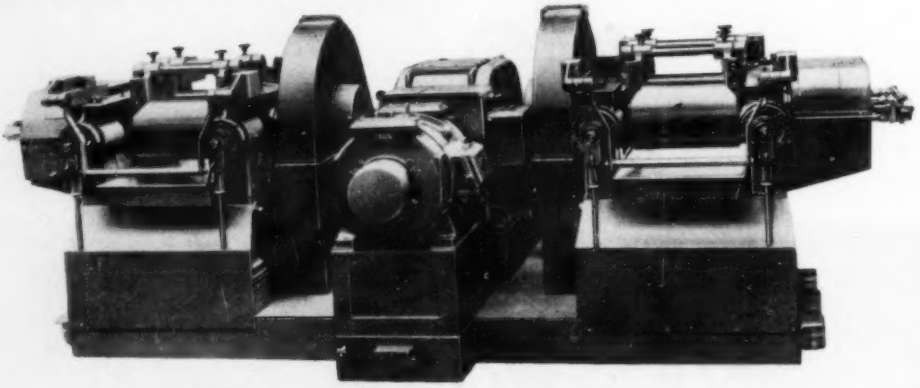
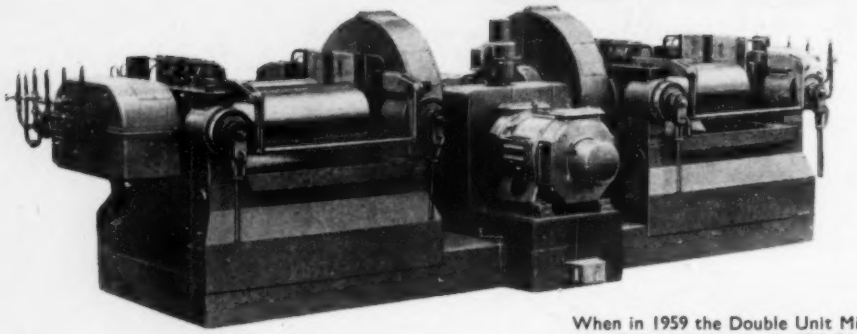


C.E.12 Double Unit Mixing Mills with central drive mounted on steel sub-frame, fitted with vibro insulators. Rolls 16" dia.



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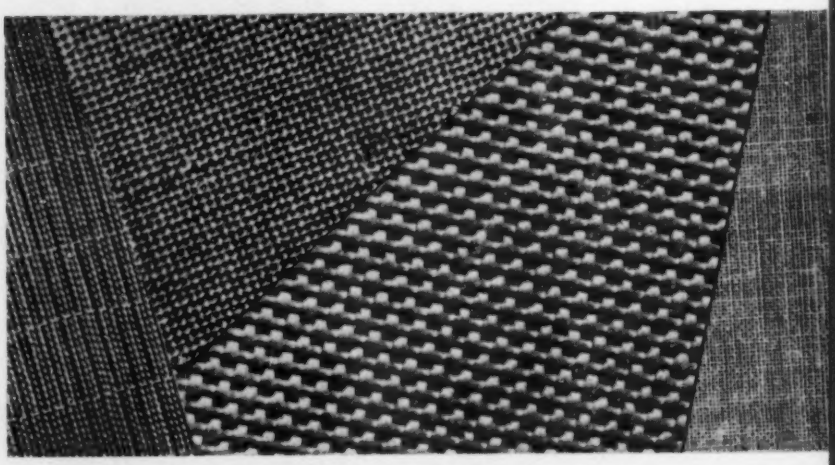

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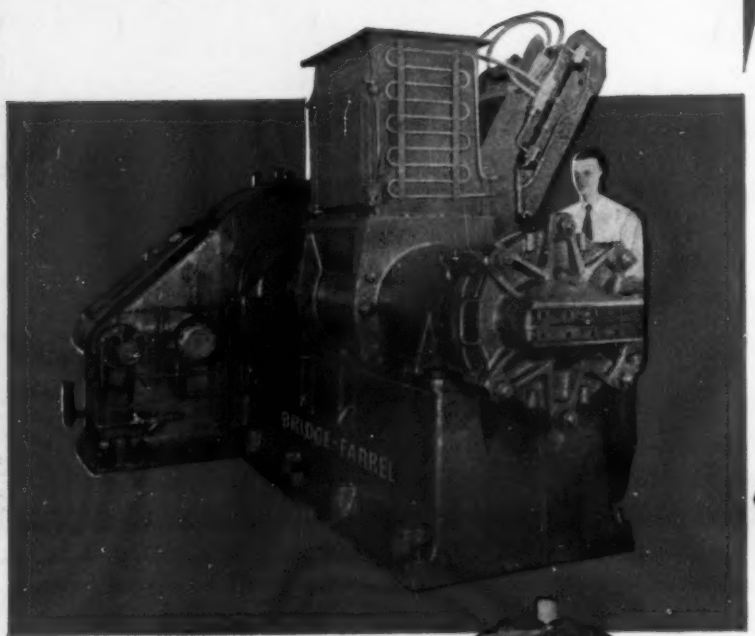

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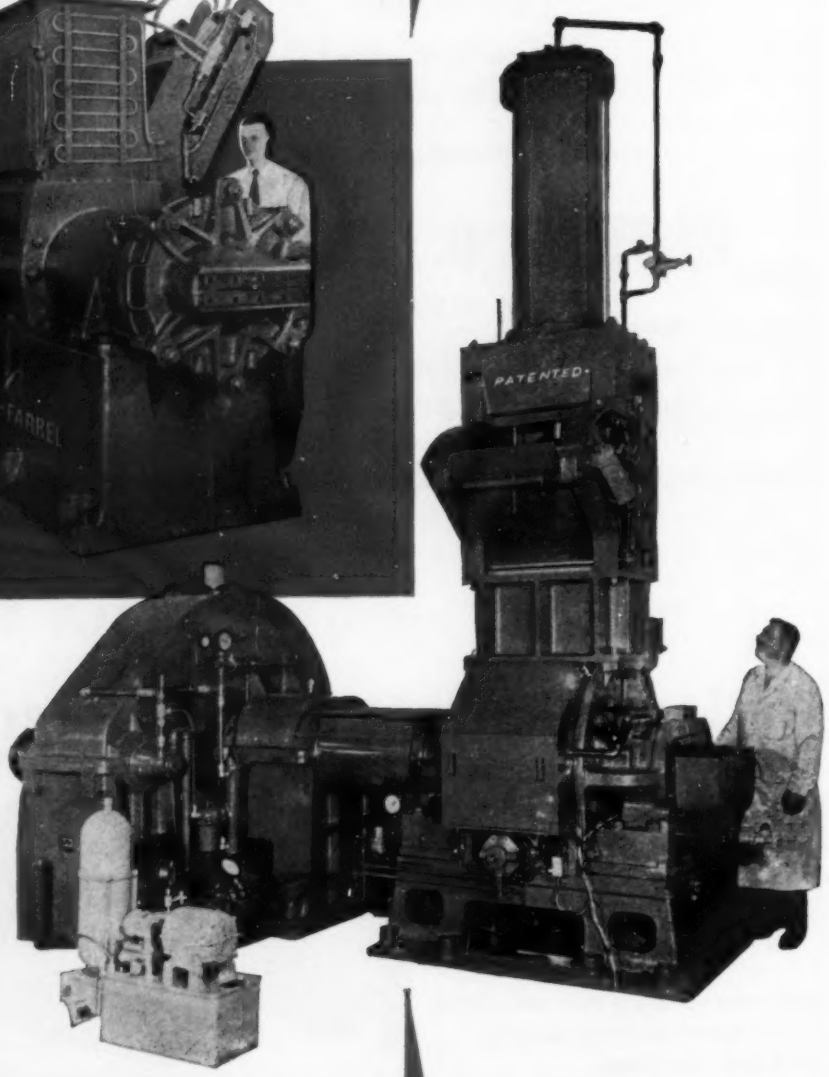

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Rubber Journal and International Plastics

Volume 139 **Price 1s. Post free 1s. 4d.** **No. 25**

IN ITS 77th YEAR

December 17 1960

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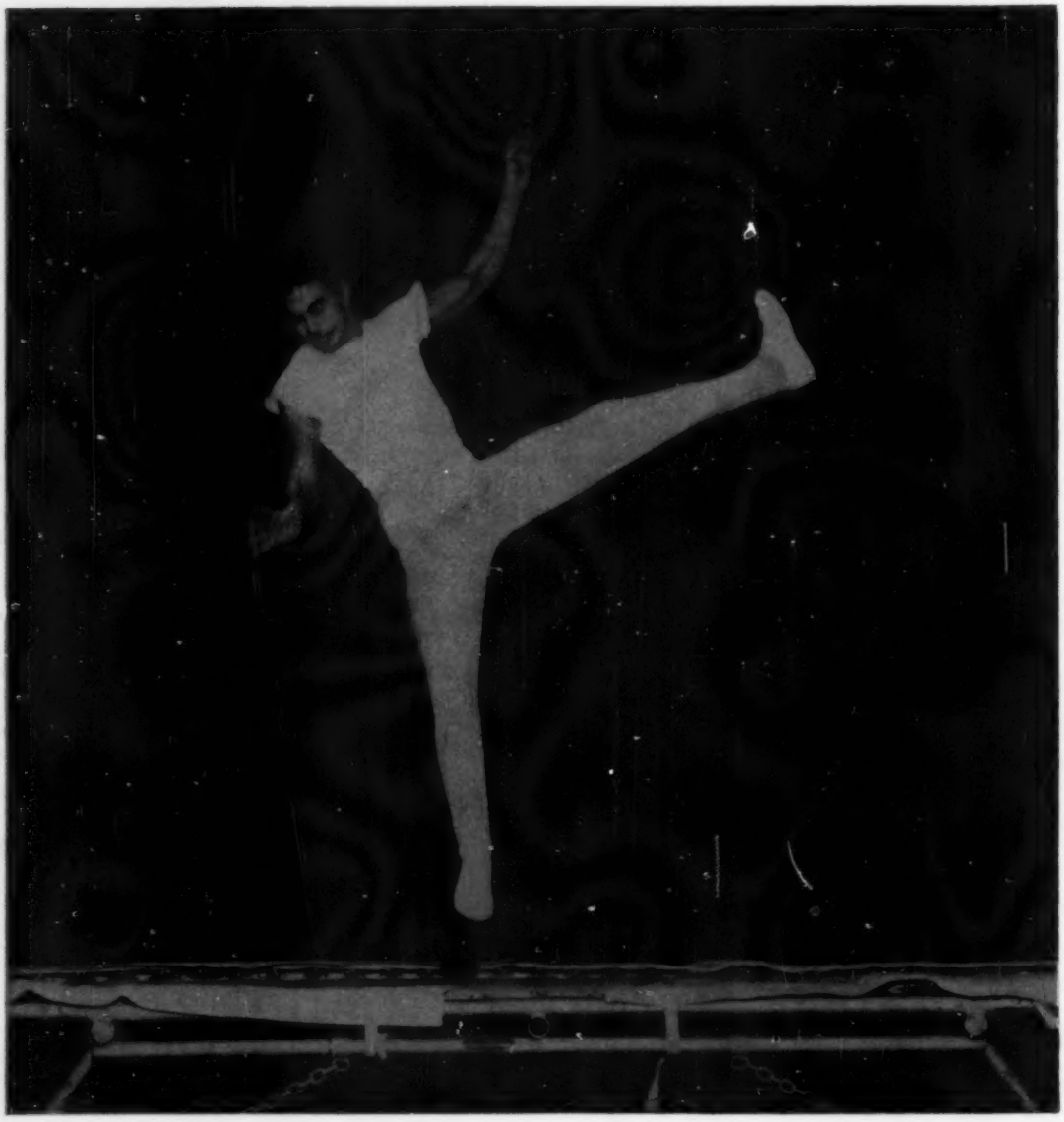


NOTES of the WEEK

Cracks in the Curtain

ALTHOUGH the political relationship between this country and Russia is a matter of small ups and big downs, the relationship between industrial factions in the two countries continues to improve. Politically the iron curtain may be as firmly down as ever, but economically—and certainly in the rubber and plastics industries—chinks have widened into cracks through which an increasing amount of goodwill is flowing. Contributing towards this is the first privately organized trade and technical delegation to visit Russia since the war, which is now in the country. The party consists of 12 top engineering and industrial representatives, and includes a delegate from Turner Machinery, the Leeds rubber machinery manufacturers. The programme is certainly an ambitious one: lectures are being given to groups of 50 and 60 Russian technicians and engineers, and visits are being paid to a list of factories from Moscow to the Urals.

Visits of this kind can eventually lead to projects such as the Dniepropetrovsk tyre works, which is being built by the UK consortium Rustyfa. When this is completed—and latest reports indicate that it is well ahead of schedule—it will be one of the biggest plants of its kind in Russia and a fine £16m. advertisement for the UK.

Big Dividends

THE interchange of know-how is not all one way. When Stanley Chambers, I.C.I.'s chairman, was in Moscow recently, he announced that his company was negotiating for its first Soviet licence, for a manufacturing process for caprolactam, the monomer for nylon 6. In fact he was also reported as saying that in a few years we may be buying more licences from Russia than they are buying from us. Meanwhile I.C.I. continue to be in the forefront of Western countries dealing with Russia. Their plastics exhibition in Moscow earlier this year, at which an animated Mr Khrushchev bubbled over with enthusiasm, has now paid big dividends, in the shape of Russian negotiations to buy a polythene plant.

All these things underline what we have stressed before: the best way to better relations with Russia is through increased trade and the interchange of scientific and technological information.

It is better to carve out steps to the summit with trade agreements than with more abstract negotiations. In fact, after Mr Chambers' performance, it is tempting to add that our businessmen are more diplomatic than our diplomats.

Retirement Problems

ALTHOUGH it was not a main subject at the recent Rubber Manufacturers Employers' Association health conference, one of the topics that frequently came up was the problem of retirement. It was plain that a lot of people in the industry—and not all of them over 50—are seriously concerned about this. Half the working population of this country is over 40 and, as Dr Alistair Heron said at the conference, they are some of the best assets we possess. A big proportion of these see retirement getting nearer, and its approach certainly has an unsettling effect. Up till now there has been no real basis for dealing with the problem, but this week a study has been published which throws some light on the subject.*

The study finds that while a number of American companies have retirement programmes for their employees, British firms do not. American schemes include such things as a gradual easing off of work, and social and psychological advice on retirement.

The study surveyed the retirement policies of 55 big firms with 10,000 or more employees: 19 of these had rigid retirement ages, six had the same for some employees and 29 had flexible retirement ages. It points out the considerations that should decide retirement policies for manual workers and junior staff may well be different from those for senior staff. In fact it argues the case for compulsory retirement being strongest at the management level, both from the company's point of view—it avoids blocking promotion —and from the social point of view, since managers should be in a better position than other groups to enjoy their retirement. Apart from the financial aspect this seems a dubious argument; many a manager is as dependent on his job for his main interest as anyone else. However, this study should certainly provide a basis for discussion throughout industry. We hope that the polymer industry, which has always been concerned with welfare in safety and health will take a lead in tackling this problem.

*'*Retirement: A Study of Current Attitudes and Practices' by the Acton Society Trust, 39 Welbeck Street, W.1*

NEWS *Briefs*

HOECHST PETROCHEMICALS—MB FOR TRINIDAD
DANISH PLASTICS PLAN — USSR BUY RSS—HULS
POLYDIENE—TERYLENE DYES—FRENCH TYRE CO

●**Nigeria** — The Minister of State at the Board of Trade, F. J. Errol, is to visit Nigeria in January. He will discuss trade and developments in the country. Western Nigeria already exports 35,000 tons of rubber a year and it is expected that the value of production will increase by 10% over the next five years.

●**Singapore** — Foreign imports of rubber into Singapore and Malaya during November amounted to 28,638 tons, according to preliminary figures issued by the Chief Statistician. The figure for October was 37,415 tons.

●**Cuba** — According to unofficial sources, a Cuban Government decree is expected to nationalize four American-based companies with estimated assets totalling nearly $30m., including the US Rubber Co. and the Goodrich Tire Co. They were 'intervened' (the local term for a takeover) by Cuba earlier this year.

●**West Germany** — Chemische Werke Hüls have completed their tests for the production of polybutadiene and production totalling 20,000 tons per year may now begin in 1963. Small scale production of ethylene propylene copolymers is now in progress.

●**Trinidad** — Metal Box (Overseas) is to set up a company in Trinidad with an authorized capital of WI$2.5m. The company has applied for pioneer status and is said to be looking for a site near to Port of Spain.

●**Singapore** — The Soviet Union has bought between 10,000 and 15,000 tons of rubber for December shipment, according to unconfirmed reports. China's purchases for December are estimated at about 8,000 tons.

●**Australia** — Laporte Industries Ltd. are to build a £A4m. titanium oxide plant in Western Australia. The plant, sited near source of the main raw material, Ilmenite, will be at Bunbury, 115 miles south of Perth. It will have a production capacity of 10,000 tons per year and is expected to start production by 1964. Last month it was announced that Laporte was taking a 15% interest in a joint venture with American Potash and Chemical Corp. to manufacture titanium oxide in California. In the UK Laporte is spending £3.5m. on the expansion of its titanium oxide plant at Stallingborough, near Grimsby.

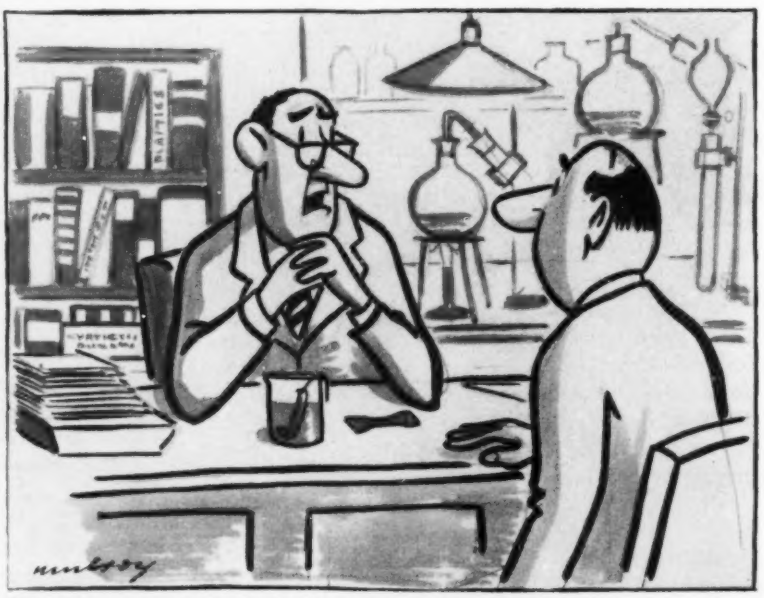
●**Denmark** — Collaboration between manufacturers in EFTA and the Common Market will begin in Denmark shortly with the formation of a Danish-Netherlands company to produce polythene products. A Danish company, Esbjerg Tovvaerksfabrik A/S will co-operate with Kunstzijdespinnerij NV of Nijmegen, to form the new firm of Nymet A/S which will produce products for the Scandinavian market. Danbritkem A/S — half owned by I.C.I. — is building a polythene plant near Copenhagen.

●**France** — Kleber Colombes — which is linked with B. F. Goodrich — has formed a Swiss company Kleber Colombes (Suisse) S.A., Zurich. The firm is to market in Switzerland tyres, industrial rubber, latex and plastics produced by both the French firm and Goodrich.

●**Austria** — Semperit Osterreichisch-Amerikanische Gummiwerke AG, said to be the biggest Austrian rubber firm, has increased capital by Sch.20m. to Sch.200m., to enable it to realize a number of major investment projects, especially in the field of thermoplastics. Semperit raised output of rubber products in general by 12% in 1959, to a total of 36,500 tons.

●**Western Germany** — Farbwerke Hoechst is reported to be encouraging the interest of a number of German and foreign oil companies in the construction of an oil refinery in the Frankfurt area. Hoechst at present use about 260,000 tons of crude and 85,000 tons of light fractions a year in the production of petrochemicals, and are hoping to interest oil companies in the establishment of a refinery near their own plants, which they are proposing to expand. Crude would be supplied to such a refinery by means of prolongation of the Marseilles-Karlsruhe pipeline, or by ship from Karlsruhe or Cologne.

●**France** — A new range of dyestuffs, specially designed for dyeing Terylene have been developed for the world market by Compagnie Française des Matieres Colorantes, of Paris. The new range — known as the Esterophiles — includes seven colours commercially available.



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I.C.I. Divisional Reorganization

MANUFACTURING DIVISIONS REDUCED TO FIVE

A SCHEME for regrouping I.C.I.'s divisions and the redistribution of responsibilities of executive directors is to come into force on January 1.

Following the retirement last March of the economic planning director, J. L. S. Steel, the company has discontinued economic planning. It has also combined research and development which reduces the number of functions from eight to six. An additional overseas director has been appointed.

The functional directors will be: commercial, W. D. Scott; finance, P. T. Menzies; overseas, R. C. Todhunter (Western Hemisphere and Africa south of 15 degrees of north latitude); Dr A. Caress (Europe, excluding USSR and Eastern Europe); Dr J. S. Gourlay (rest of the world); personnel, C. M. Wright; research and development, Dr J. Ferguson; and technical, Dr R. Beeching.

The manufacturing divisions have been regrouped and the number of groups reduced from six to five.

Plastics, heavy organic chemicals and fibres come under Group C (director, C. Paine), while the Billingham and Nobel divisions, Wilton works and Severnside works form Group D (director, R. A. Banks).

SEMTEX IN ITALY

Semtex Ltd., a member of the Dunlop Group, are now producing plastic flooring materials in Italy.

An agreement was signed last year between Semtex, Mazzucchelli Celluloide SpA and Domosic SpA (a Mazzucchelli subsidiary) by which the latter companies were licensed to manufacture and sell in Italy, Semastic decorative tiles and vinyl abestos tiles. Special trade marks and names — appropriate for the Italian market — have been adopted. Semastic tiles will be known as Silex and Vinylex tiles as Isoflex.

The Mazzucchelli company, whose factory near Varese employs approximately 3,000, is one of the leading plastics manufacturers in Italy and is closely concerned with building industry requirements. The new products will be distributed through their building product sales organization — Domosic SpA, and other organizations.

BTR to Expand

BTR state that 'in view of expanding business' they aim to raise £2m.

It is reported that in spite of reactions from the car and domestic appliance industries, most sections of the company have long order books.

Report: page 1033

Kerala Planting Scheme

The Rubber Board in Kottayam, Kerala State, has passed a resolution recommending to the Government of India that the new planting loan scheme should be extended to all existing rubber growers irrespective of the size of their holdings, and also to newcomers to increase production of natural rubber in as short a period as possible. Necessary funds for this purpose should be provided in the third Five-Year Plan, the resolution said.

South African SBR Plant

THE synthetic rubber plant the Synthetic Rubber Development Co. is considering setting up in South Africa may be built at Durban, where Shell is building a new refinery to supplement production from the existing Standard Vacuum plant. Another possible site is Port Elizabeth where 75% of all tyres made in South Africa are produced.

Shareholders in the company, which was established earlier this year, are a number of international rubber companies including Dunlop, Firestone and General Tyre and Rubber Co., together with the Industrial Development Co. of South Africa and other South African industrial companies.

Between 60 and 65% of the shares in the projected plan would be held in South Africa, according to sources in Johannesburg. Annual consumption of synthetic rubber in South Africa is estimated at about 15,000 tons at present.

M. Miller, managing director of Firestone, said recently that the project was still in 'an exploratory stage' and it is not expected that details would be announced for some time.

Kay Buy Mill

Additional premises just acquired by Kay Bros. Plastics Ltd. five miles from their Marple, Cheshire, works will enable them to step up polyurethane foam production by a third, the company states. Kay's, a member of the Reckitt and Colman group, have taken over a former cotton doubling mill in New Mills, Derbyshire.

Eventually all the conversion and making up of Kay's plastic foam into seats, cushions and other articles will be carried out at the New Mills factory where new cutting and adhering plant is being installed. The Marple works will go over solely to the production of the foam.

Eschmann First With New Equipment

ESCHMANN BROS. and Walsh Ltd. is said to be the first rubber firm to install a new type of equipment from Temperature Ltd. The firm has placed a £10,000 order.

The installation of this equipment, it is claimed, will reduce rejects and lost time by providing stable atmospheric conditions free from excessive heat and humidity during the processing of rubber for catheter tubes and similar medical products. It is said it will virtually eliminate problems associated with the coagulation of rubber stock due to humidity, and will incorporate an exhaust system for the 11 ovens used in this part of the factory.

Trials of the equipment are now complete. It will have a capacity of 38 tons refrigeration under normal conditions of use and, owing to the limited space available in the factory, has been designed in an especially compact form. The installation is expected to be running in the Spring of 1961.

Carrington Contract

The Lummus Co. (heat exchanger division), of London, has been awarded a £100,000 contract by Shell Chemical.

The contract is for the design of the heat exchangers for installation in the ethylene unit being constructed at Shell's Carrington plant.

Laporte Chemicals Ltd. have started the first UK production of sodium chlorite at their Luton plant.

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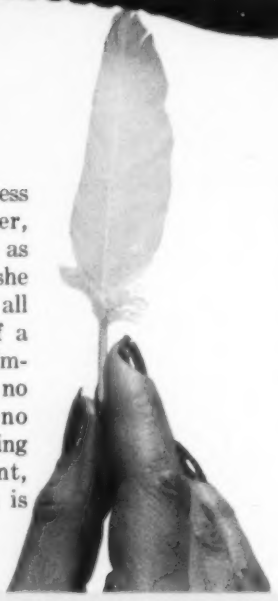

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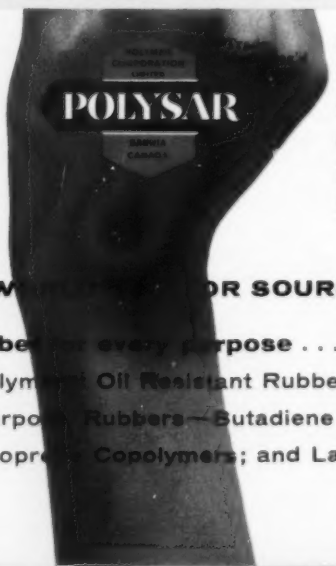

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Reinforced Plastics Progress

FURTHER DETAILS OF THE CONFERENCE

REINFORCED plastics tools are being used instead of matched metal moulds in some applications where the poor thermal conductivity is not a serious drawback. During the discussion following the paper given by J. E. Linsell at the conference (a report of the conference and of Mr Linsell's paper appeared in *RJIP* December 10, 964) he was asked for his opinion of these moulds. He replied that in the experience of his company it had been found that, for large quantity production, the advantages to be obtained by using a metal tool produced to normal compression moulding standards, offset the initial high cost, but that other types of tool such as those made from reinforced plastics certainly had valuable applications. The possibility of improving the thermal conductivity of plastic moulds was discussed and it was generally agreed that there was, as yet, no satisfactory method of doing this although the use of aluminium wool has been claimed to be an improvement on previously used fillers.

Another factor which could help to offset the high cost of metal tools was the possibility of speeding up the mould turn round by the use of rapid curing cycles. Although very fast cure times of less than one minute could be achieved using preimpregnated materials or fast curing resins recently developed it was pointed out by Dr G. Ader (Artrite Resins Ltd.) that in some cases the limiting factor was the time taken to close the mould. This must not be done too quickly if even distribution of the resin was to be ensured.

Concurrent Sessions

As reported last week, papers delivered on the second day of the conference were divided into two groups devoted respectively to 'Recent advances in materials processes and design' and 'Engineering in reinforced plastics.'

Among the papers delivered in the session on recent advances in materials, processes and design were several given by visitors from overseas, including three from USA and one from Germany and in the other session the only overseas contribution was the paper by Dr Goldfein referred to elsewhere.

Dr L. Ainsworth, Turner Bros. Asbestos Co. Ltd. opened the proceedings with a paper on the properties of glass for plastics reinforcement in which he reviewed the unique properties of glass fibres and considered the long term strength properties of glass and glass laminates in an attempt to determine what factor of safety should be applied to short term strength measurements of glass reinforced plastics to ensure their survival under long term loading. This was followed by two other papers on the properties and developments in the field of glass fibres. These were on factors affecting the strength of glass fibres by Dr W. F. Thomas, University College, Cardiff, and developments in the field of glass fibres of improved mechanical properties by K. Loewenstein, Glass Yarns and Deeside Fabrics.

Filler Effects

Dr P. Delfosse, Pluess-Staufer AG, gave an account of the effect of fillers on the mechanical properties and other characteristics of polyester resins both with and without fibre reinforcement. This was followed by a paper given by M. W. Holloway, Atomic Weapons Research Establishment, Aldermaston, who described the results obtained in an assessment of polyester laminates reinforced with selected fabrics based on organic fibres. Natural and synthetic fibres were considered and although all the laminates examined had inferior strength to glass reinforced laminates some properties such as abrasion resistance make them interesting materials.

Two papers from USA gave the results of current test programmes on the effect of rapid stressing on the tensile properties of glass reinforced plastics read by Miss E. McAbee, Picatinny Arsenal, New Jersey, and on the effect of combined stresses and temperatures on creep of plastics by Professor W. N. Findley, Brown University, Rhode Island.

M. J. Mason, Electrical Research Association, in his paper on the effects of heat and mechanical strain on the electric strength of various laminates, discussed tests carried out to classify the discharge resistance of glass fibre reinforced laminates using

Non-destructive Test

DR S. GOLDFEIN of the plastics section, materials branch, US Army Engineer Research and Development Laboratories, probably contributed as much to the reinforced plastics conference as any other person present. He took a prominent part in the discussions and read a most interesting paper on the development of a non-destructive test for plastics.

The investigation was undertaken to develop a test for inspection purposes. It was believed that a penetration test might accomplish this if some property characteristics of the material could be derived from the elastic range of a stress-strain curve obtained during the test.

Dr Goldfein described the penetrator used and developed with the aid of some mathematics, which had many of the delegates gasping, a penetration index which could be related to various properties of the laminate under test including tensile strength, compressive strength and shear strength. Materials tested under the penetrator showed an initial high deformation but the curve of penetration depth against load straightened out with increasing load and had a long proportional range before reaching the proportional limit and ultimate load. The penetration index could be calculated from the section of the proportional range below the loading at which a permanent mark was left on the specimen and it is therefore possible by the use of this method to obtain material properties without damage to the specimen.

Dr Goldfein indicated the lines that future investigation on the test method would take and concluded that the method as described was suitable for use on all types of plastic and could be carried out easily and cheaply. He also felt that new properties designated as penetration proportional limit, penetration strength and penetration index might be useful in characterizing plastic materials for design or inspection purposes.

various silicone, epoxy, polyester and melamine resins at varying temperatures and under different degrees of strain.

Quality Control

P. W. Erickson, US Naval Ordnance Laboratory, described the NOL ring test for quality control of glass filament roving, developed because of the widespread use of winding techniques to produce large rocket chambers and pressure vessels. Recent developments described included a hydraulic fixture to obtain tensile strengths on the test rings.

The last paper in this session was on synergistic or complimentary action of mixed catalysts given by J. W. Cywinski and C. H. Stoor, Novadel Ltd., and dealt with the theoretical aspects of the action of mixed peroxide catalyst systems illustrated by examples based on various monomers and the influence of these systems on the properties of the end products.

Engineering Aspects

The engineering session papers were devoted to the more practical problems concerned with the use of reinforced plastics in various industries and applications.

The first of these was by J. Westell, E. W. Tyler and Co. Ltd., who discussed some points concerning the design and manufacture of reinforced plastic yachts and boats. He stressed the need to design specifically for the material, treating the whole craft as a single structure and referred to the use of sprayed rigid foams to produce light but strong sandwich structures. Also discussed were the continual improvements in available materials, the importance of good moulds and the bonding together of materials for assembly.

Reinforced plastics in the chemical industry was the subject of R. R. Guest, Prodorite Ltd., who discussed the production and design of plant and equipment for use in the chemical and allied industries where service conditions are usually severe, both as regards chemical environments and temperature. Mr Guest referred to the use of composite structures where glass reinforced plastic was used for its strength, combined with thermoplastic sheet such as PVC to impart chemical resistance.

This was the main topic of discussion following the paper and several points were mentioned including the use of the thermoplastic liner as a mould for the laying up of the laminate, the relative merits of a thin vacuum formed or thick welded liner and the methods of jointing the latter (which was considered to be the best for chemical plant work) other than welding.

Problems associated with the use of glass fibre reinforced plastics in the heavy electrical industry were considered in a paper by A. C. Kidd, English Electric Co. Ltd., who confined his remarks to glass/epoxy materials and said that although there was usually abundant information on the basic properties of the material available from the manufacturers it was still essential to carry out extensive tests to ascertain how these materials would behave under particular conditions in any application. Mr Kidd described the results of tests evolved to assess the properties of laminates by measurements on the heat deflection properties and correlation of these with loss angle and permittivity values at differing temperatures. The good agreement found between these properties indicated that the tests gave a reasonably true indication of the temperature associated with change of the resin structure from a glassy to a rubbery state.

The paper by K. Pollard and N. G. McCullagh, Permali Ltd., discussed raw materials, processing methods and properties of reinforced plastics with emphasis on the particular problems met with by fabricators supplying technical products to the electricity industry.

Combinations of glass fibre with phenolic, melamine, silicone, polyester and epoxy resins were covered, with particular reference to components manufactured from pressed sheet and tube and moulding manufacture by matched metal moulds and wet lay-up techniques. Development of fabrication methods for large structures using lightweight cores was also covered. Applications described included switchgear, rotating machines and transformers or parts such as arc barriers, control devices and winding covers.

Atomic Energy

The lecture on the production of the vacuum envelope for the synchroton 'NIMROD' has been described elsewhere in this article and apart from this single mammoth project reinforced plastics are being used for numerous other applications in atomic energy plant. The paper by H. Wells and I. D. Aitken, Atomic Energy Research Establishment, Harwell, referred to a variety of applications where these materials have been used and gave some information on the effects of radiation on plastics. The general conclusion reached by the authors was that there was wide scope for further investigation but that as the thermoplastics were more resistant chemically the future lay more probably in the use of composite structures combining the best properties of both types of material. Also mentioned was the possibility of using boron-free glass, which would have a smaller capacity for absorbing neutrons, to produce laminates with better radiation resistance.

The final lecture on the second day in the engineering session was by H. G. Werrell, Kenilworth Manufacturing Co. Ltd., whose subject was 'reinforced plastics for tooling — an attempt to make them foolproof.' He discussed the growth in the use of

Continued on page 1032

GRP in Nuclear Research

WHAT must be one of the largest and most ambitious projects ever to make use of reinforced plastics is the 7GeV Proton Synchroton 'NIMROD' now under construction at AERE Harwell. A paper delivered by R. J. B. Hadden and R. Sheldon, National Institute for Research in Nuclear Science, described the research and development work undertaken in designing a glass reinforced epoxy resin vacuum vessel for the synchroton. This is in the form of a ring some 50 metres in diameter and of cross-section 200 x 25cm. built with a thin double wall construction to conserve space.

The special requirements for this vacuum vessel are low rate of gas evolution, high radiation stability and low electrical conductivity. Epoxy resin laminates cured with an acid anhydride were found to be the most satisfactory and the vessel was built up from sections produced in matched tools under pressure.

The test programme to decide on the best combination of reinforcement, resin and curing system described by the authors was exhaustive and provided useful data on the radiation resistance of these materials which should prove of value in the future as nuclear power becomes more widely used. The achievement of building the vessel to the very close dimensional tolerances demanded and to the high standard necessary is a fitting tribute to the ingenuity and technical ability of the designers and manufacturers. The satisfactory completion of this project should do a lot to increase the confidence in reinforced plastics for the manufacture of large structures.

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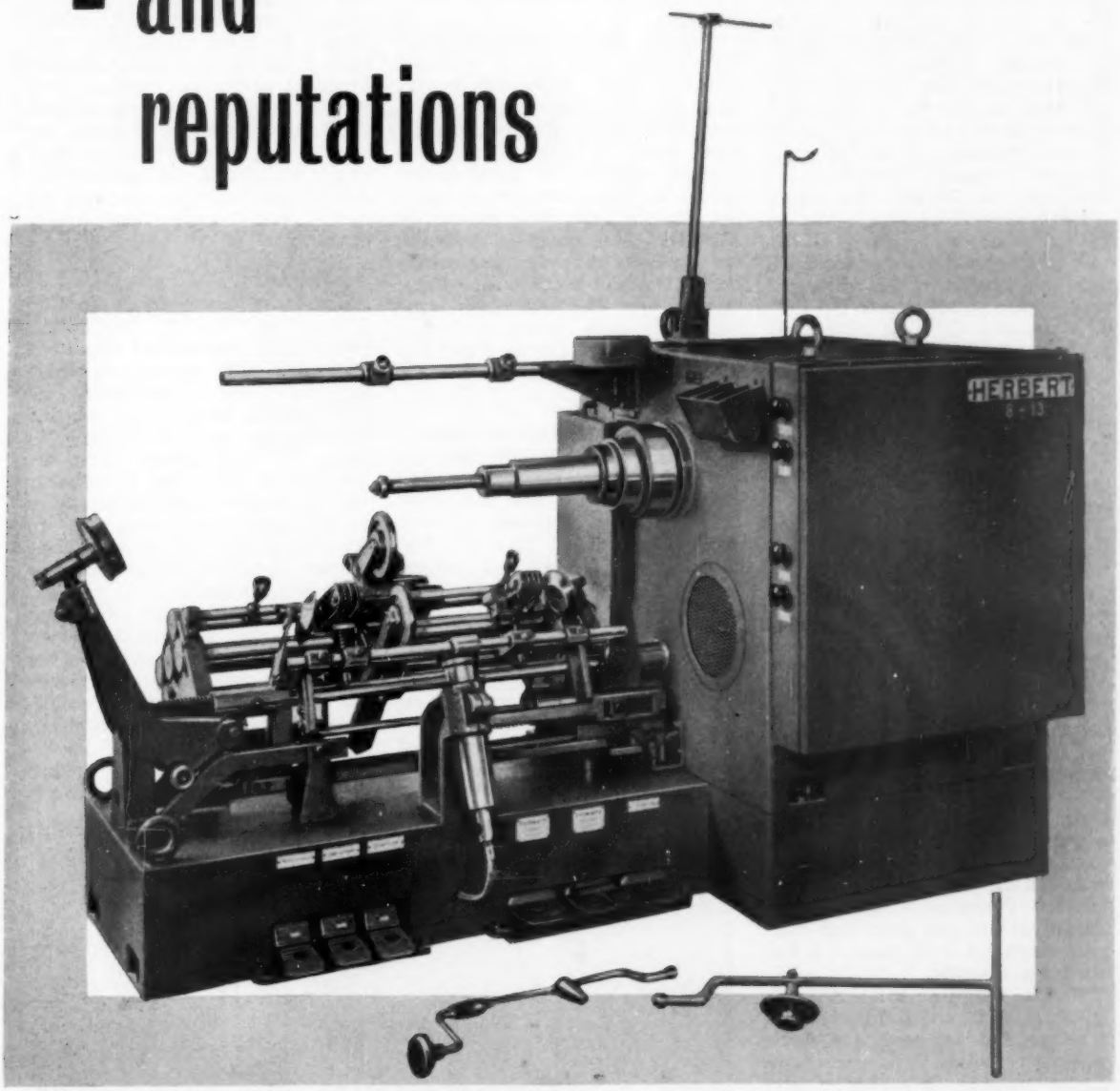

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Three Paces and a Railway

PROGRESSIVE DEVELOPMENT AT VITAFOAM

THE steady increase in recent years in the use of latex foam for cushioning, mattresses and upholstery in general, reflects the growing appreciation by the furniture trade, and more and more by the automobile industry, of its outstanding properties for these purposes. In the UK, consumption of natural rubber latex has risen from 10,679 tons (dry rubber content) in 1949 to 27,022 tons in 1959. From the beginning of this year there has been an additional source of supply in the SBR high solids latex manufactured by ISR. This synthetic is being increasingly used in combination with natural latex for foam rubber products.

One of the largest producers in Europe of latex foam cushions, mattresses, pillows and upholstery is Vitafoam Ltd., of Middleton, Manchester, who use both natural and synthetic rubber latex.

Not So Satanic

The converted cotton mills from which flow in every increasing numbers the latex, and other products of Vitafoam Ltd., although they may once have been so, can no longer be called satanic; neither are they dark. Bright and cheerful colour schemes and other changes have made a world of difference. And although the activity in them is certainly as great as they have ever known, every aspect of it is becoming increasingly mechanized and automated. So much so that the aim of the company's chairman and joint managing director, Norman Grimshaw — that no man should have to take more than three paces from his work place — is fast becoming a reality.

For a company that only last month entered its 12th financial year, Vitafoam Ltd. has made remarkable progress. Already it is one of the largest producers in Europe of latex foam products, and there are probably no bigger companies in the USA. Mr Grimshaw, who left the Dunlop Rubber Co. shortly after the last war, started the company in 1949. With him then were Graham Smith, who also worked for Dunlops and is now joint managing director; Fernley Parker, four years with Norman Grimshaw in the Royal Artillery during the war, who is secretary and financial director; Fred Whitehead, sales director, and Alfred Broadbent, with whom he was at school, works director.

Founded with a capital of £100, the company now has an available production area of 800,000 sq. ft., uses some 125 tons (dry) of rubber and 15,000 gallons of furnace oil in a week, works a 24-hour day five days a week, employs over 1,200 people and has an annual turnover approaching £5m. It owns three factories at Middleton, Manchester — Don Mill, the headquarters, the intriguingly named Soudan 1 and Soudan 2 Mills, and the Glen Mill at Oldham, some four miles away, where production was originally started. It is also still a private company.

All Shapes and Sizes

Latex foam mattresses are made at the Glen Mill. Most of them are reversible and are made to standard sizes although some have been made up to 7ft. 6in. wide and to other special dimensions. They are sold made-up and covered and, judging from those on display at the company's recently opened London showroom at St. Georges Street, Hanover Square, the fabrics used are first class and the designs excellent. Not surprisingly, considerable numbers are exported all over the world.

Cushions of almost every shape and size are made at the Don Mill, acquired in 1956. Here, up under the roof of this massive building are 2,000 gallon storage tanks to which rubber latex is fed from 4,000 gallon road tankers: natural from Henry Diaper's Liverpool warehouses; synthetic from the International Synthetic Rubber Co. Ltd., Southampton. Nearby are rows of ball mills grinding powders to the fine particle size necessary for incorporation in dispersions; and the mixing and compounding departments.

Automation

The heart of the business in Don Mill is on the first floor where four highly automated continuous production lines operate ceaselessly day and night. Undoubtedly the most notable features here are the cure chambers, each of which is 220ft. long. This great length, where the products are vulcanized in steam at 100°C., enables a considerably faster cycling time than usual to be achieved, of the order of 35 minutes at most, with a consequently increased volume of production. The sequence consists, in short, of latex mixing and pouring — there are dual Oakes continuous foaming mixers on each of the four lines — lid-closing; gelling; curing chambers; stripping the moulds; washing; mould cooling and cleaning; drying; spray application of mould-release agents and, again, a final drying of the moulds. The moulds

Don Mill, headquarters of Vitafoam Ltd. The large floor areas of this and three other one-time cotton mills owned by the company have proved ideal for conversion for the large-scale manufacture of latex foam products

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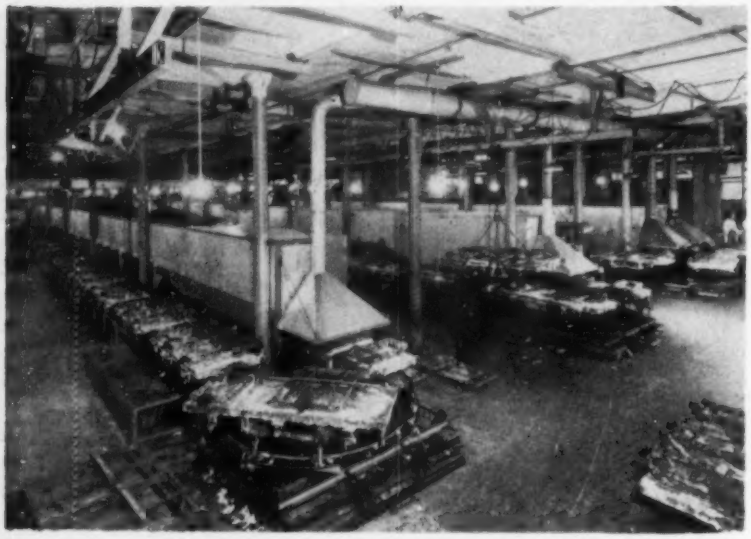
themselves move around the production line on four-wheel trucks. An overhead gantry and hoist system enables moulds no longer required to be taken out of the line, and the new ones linked in, without stopping production.



Four continuous production units showing entry into the 220ft. vulcanization chambers

After something like 600 times of use, moulds are cleaned by shot-blasting carried out on the premises.

As with most of the machinery and equipment, the production lines were fabricated by the company's versatile engineering department.

Success With Synthetic

With the introduction by the International Synthetic Rubber Co. early this year of a general purpose synthetic rubber latex, Vitafoam at once began tests to see to what extent SBR latex could be incorporated with the natural variety in foam products. It was of course known that SBR latex on vulcanizing showed slightly less shrinkage than natural latex; 3-5% against natural's approximately 8%. This means that if existing moulds were used for, say, a 25 natural/75 SBR ratio, oversize products would result. Conversion of thousands of moulds is out of the question, financially if for no other reason. While 100% SBR latex foam products have been satisfactorily made, the company is at present making products of 75% NR/25% SBR and also 50/50 blends, besides, of course, the entirely natural product. The company is inclined to regard a 25% NR/75% SBR ratio as a reasonable early aim, at least for one production line, with perhaps another line on the 75/25 ratio. This might give as near to the best of both worlds as possible. In fact, the 2½% reduction made last October in some upholstery cushion, was officially attributed to the successful use of ISR's synthetic rubber latex.

From the actual production line, the latex foam cushions proceed to the floor below where they are first placed in centrifuges, damp dried as it were, and then into 200ft. drying ovens in which fans blow air over steam heated coils. The goods are then ready to go up several floors, clamped between the steel sides of a 'sandwich' conveyor which goes vertically up the wall, to the department where inspection, covering, the trimming and assembly of reversible cushions and finally packaging takes place. This occupies the entire area of one of the Don Mill's vast floors.

Most of the cushions made for the furniture industry are reversible; those for the car industry — Vitafoam numbers Vauxhall, BMC, Rootes Rovers and Ford among its customers — and for public transport, trains, coaches, etc., are single-sided. Incidentally, the approximate weight of an average furniture cushion is 6¾-7lb.

Trimming and assembling reversible cushions. Above the heads of the operators can be seen some of the giant conveyors—push-button controlled as required—which move stock received at the far end of the room from the drying department

McGee's Railway

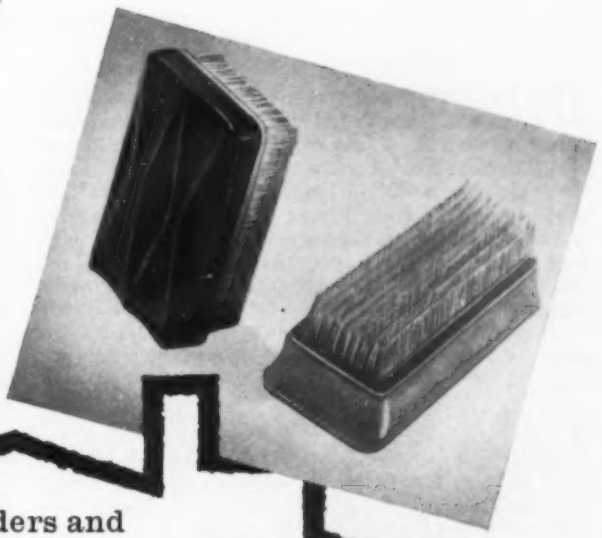
From this department, finished goods make their way to the despatch department. 'Make their way' may seem an odd phrase but it is apt, for the cushions are carried unattended by a highly original conveyor system. This was based on an idea of Norman Grimshaw's and designed and planned by Alf Broadbent, works director, and his young assistant, Bob McGee.

Following a course, apparently erratic but in fact carefully plotted, through most of the floors of Don Mill is what is officially described as a 'tow-truck conveyor.' This links all processing departments by means of a half-mile length of continuous, moving chain and ramps of astonishing steepness between floors. To the chain, as and when required, four wheel trucks, substantial things about 5ft. x 5ft. x 2ft. wide with an open side, can be instantly attached or detached.

'McGee's Railway,' as their conveyor system might be called — or perhaps at first labelled 'Bob's Folly'

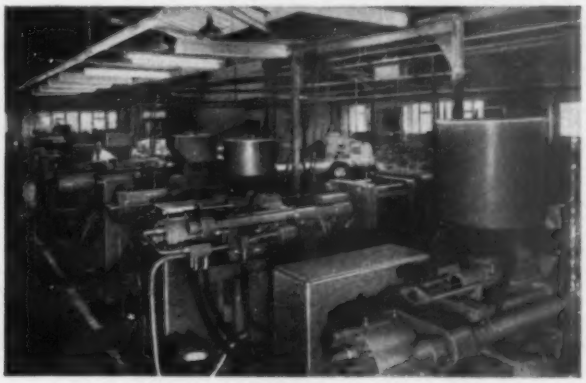
Continued on page 1020

Denman Products Ltd. won the 1960 'Alkathene' design trophy



Take your injection moulding to Denman Products Ltd., and you call in not only a moulder but a mould maker, Denman Tools Ltd. That means you get the whole job, from pencil sketch to successful product, all done under one roof. These brushes, made from 'Alkathene' I.C.I. polythene, won the 1960 'Alkathene' Design Trophy and show just what good design and production can mean. Write to or telephone Denman Products Ltd. now.

Moulders and mould makers under one roof



A12 *'Alkathene' is the registered trade mark for the polythene manufactured by I.C.I.*

DENMAN PRODUCTS LTD., Bridgefields, Tewin Rd., Welwyn Garden City, Herts. Tel: Welwyn Garden City 6338

VIEWS and REVIEWS

THE Englishman is not so clever at languages as his continental colleague, and is easily taken in by superficial resemblances. I can still remember the feeling of disappointment when I learned that the English meaning of the German word 'Stickstoff' was not 'adhesive' but 'nitrogen.' This week, I want to write about adhesives and as most of the matter comes from the German technical Press it might be a good idea if I first expressed my thanks to two people for introducing me to two useful German dictionaries.

Words About Words

It will not slander the Scots people (for whom I have a great regard) because they rather encourage the telling of stories about themselves, if I repeat the one about the Scotsman who, passing away some uncomfortable minutes in his dentist's waiting room by reading a dictionary there, afterwards remarked that the stories in it, though very much to the point were often 'gey short.'

Such a dictionary is Miss A. M. Wittfoht's *Plastics Technical Dictionary*, which was brought to my attention by R. J. Moseley, who himself does such excellent translations for the RAPRA (formerly the RABRM). Miss Wittfoht deals with the words in related blocks, each one a little story in itself. This makes for a better understanding of the nuances of meaning and for greater precision.

Almost a Textbook

It is published by Carl Hanser Verlag, Munchen, and is almost a textbook of plastics in itself, perhaps a bit overweighted on the engineering side and not as full — as I, for one, would like it — on the chemical side, but very reliable in its specialized way. (It has been reviewed in *RJIP* November 26 1960, 909.)

The general German dictionary which has helped me more than most, ever since I was introduced to it in Germany by Peter Merriman of the Dunlop Research Centre, is *Bellows' German Dictionary*, published by Longmans. (It has been compiled on the same unique principles for other languages also.)

Sticking Together

Isocyanates, especially triisocyanates, are finding increasing use as components of adhesives for bonding rubbers to metals. They have affinities for the metal and, through the unsaturated groups, for the rubber. The subject is reviewed by Dr K. H. Kussner in *Plaste und Kautschuk* for August 1960, Vol. 7, No. 8, pp. 389-90, in dealing with a proprietary isocyanate called 'Utazian D' which is said to be an aniline triisocyanate.

By the use of 10% of Utazian D (though it is difficult to determine whether this is 10% of the active material or of a solution of it) excellent adhesion can be obtained between iron and several types of synthetic rubber as well as natural rubber. For sticking PVC to iron, the metal surface after cleaning is painted with a solution of the isocyanate, dried, and a solution of polyvinyl acetate to which 5% triisocyanate has been added is applied.

Polyester Resin Adhesives

The same author contributes a paper to the September number of *Plaste und Kautschuk*, Vol. 7, No. 9, pp. 431-2, on polyester resin adhesives and fillers for metals. Setting of the resin is brought about by means of a redox system, for example by adding benzoyl peroxide and dimethylaniline. A striking feature of these adhesives is the way in which setting times and bond strengths can be controlled by the use of what might appear to be inert fillers such as slate powder. From work on conductivity, it was discovered that metallic powders can act as accelerators of the setting reaction. From these and other observations, useful formulations of two-component adhesives are derived.

In the same number of *Plaste und Kautschuk*, on page 432, is an article on rubber-based adhesives, 'Klebstoffe auf Gummibasis,' by R. Diehl. This starts with a brief consideration of the special advantages of elastic adhesives, the stresses they are called on to withstand, the methods of application, and some of the causes of adhesion failure.

'The mechanism of adhesion is not yet properly understood; it can, however, be taken that the bond-strength does not depend on the adhesive's biting into the roughened surface, although roughening does help by increasing the surface available for adhering.'

Ten Advantages Over Screws and Rivets

The article is mainly concerned with the use of adhesives in metal bonding for light constructional work, especially aeroplane building. A list of the 10 most important advantages of adhesives over conventional screws and rivets is quoted from a '3-M Company' publication; it includes: better stress distribution, smoother surfaces which are aerodynamically more advantageous, better electrical insulation and corrosion resistance and greater resistance to bending and vibration. Then follows an account of an investigation into the use and properties of two proprietary adhesives.

It is not uncommon for the German technical press to publish articles which, though having all the outward appearance of being records of original investigation of a scientific or technological nature, turn out on further acquaintance to be technical-service propaganda for proprietary materials. To the technologist, they can nevertheless be useful if he reads between the lines and, as W. A. Gurney recently remarked, reads what is left out. Above I have dealt with three such and there is another in *Der Plastverarbeiter* for October 1960, Vol. 11, No. 10, pp. 469-470. It deals with metal adhesives for replacing screws and rivets, recommending the materials made by Kommerling Gmbh. of Pfungstadt, under the trade names of 'Ko-Metallkleber.'

Getting Together

It was interesting but saddening to be reminded by Herbert Rogers in his warm and welcome appreciation of Fordyce Jones (*RJIP* November 26, 914) that the Institution of the Rubber Industry used to have as a motto: 'To promote a better understanding and closer relationship between all sides in the rubber industry.'

COMMENT ON SCIENTIFIC AND INDUSTRIAL MATTERS

by **F. C. JENNINGS**

Where is that motto now? When was it discarded? It is not to be found among the objects as set out in the last list of members or in the 1960-61 programme of meetings. There is no mention of it, specifically, in the latest 39th annual report of the council for the year ended August 31 1960.

What, anyway did it mean? What are 'all sides in the rubber industry?' Capital, management, labour? Juniors, seniors, students, foremen, chargehands, operatives, directors, clerks, supervisors, superintendents, secretaries? Production, technical, sales, accountants? Tyres, footwear, surgicals, mechanicals, belting, foams, hose, adhesives, engineering components? Suppliers, users, producers, customers? Young, middle-aged, old, not-up-to-it, right-in-it, well-past-it? It seems to be a matter not merely of all sides but of many dimensions as well.

On the Angels' Side

No doubt it would be excellent if all these could have 'a better understanding and closer relationship' — we are all on the side of the angels in that, no doubt. How near are we to it? To try to get some factual information about what the IRI actually does in this way, I have summarized its latest published activities in a few tables.

TABLE 1.—IRI COMMITTEES

The Council
The Executive
Examinations and Qualifications Board
Education Committee
Papers and Publications Committee
Finance Committee
Medals Selection Committee

There does not appear to be a 'Better Relations and Closer Understanding Committee' — BRACUC. And it cannot be that the meetings of the committees are in themselves the means of achieving the aim under consideration because the total number of individuals on all the committees is only between 60 and 70, or some 2% of the members.

Thinking that a clue might reside in the kinds of sectional meetings held, because it is there more than anywhere that the members get together, I have made in the following tables a rough analysis of the meetings listed in the current programme. I emphasize that they are approximate; sometimes I have had to guess from the title and author in which class to put a lecture.

TABLE 2.—SUBJECTS OF IRI LECTURES

Polymer development	10
Mixing, compounding ingredients	11
Vulcanization	3
Adhesion, bonding	5
Radiations, etc.	3
Textiles, fabrics, fibres	4
Properties, testing	11
Products, applications	19
Organization, costing, information	7
Miscellaneous	11
	84

This gives a picture of technologists meeting to discuss their own problems.

TABLE 3.—TYPES OF IRI LECTURES

Original, academic, scientific	7
Technology	56
Production	5
Engineering	2
Non-technological	14
	84

Again, it is largely a technological picture.

TABLE 4.—CHIEF SUBJECTS OF IRI LECTURES

Rubber	47
Plastics	3
Both	25
Neither	9
	84

Now that does show a trend towards getting together, the much-discussed and much-needed integration of all sides of the polymer industry, and it is encouraging to see the rubber people going so far forward with outstretched hand to those in plastics, who, it is hoped, will be elastic enough to reciprocate.

But I do not suppose that it was that sort of getting-together which was in Fordyce Jones's mind in the early 20's. I have it! I have been confusing the tables. It is the annual dinner which is designed to promote the b.u. and c.r. of all sides, held appropriately near the season of goodwill. And I must say that there was plenty of b.u. and much c.r. evident at Thursday's dinner at the Savoy.

Imaginative Engineering

The Science Correspondent of the *Observer*, Mr John Davy, in a recent account of a demonstration before the Scientific Instrument Manufacturers' Association, says that 'hypnotized subjects can quickly discover what is wrong with a machine from the operator's point of view.' Here is a new headache for our engineers whose staffs must now include one or more hypnotic subjects to test new designs of machinery and equipment.

A Releasing of Inhibitions

Even a worker who has 'used one piece of equipment for a long time often finds it difficult to define its shortcomings precisely.' Hypnosis appears to remove his inhibitions so that he concentrates on the problem and speaks about it more freely, being unhampered by the fear of others' reactions, by feelings that the 'expert who designed the machine must know best,' or by prejudice and preconceptions.

The *Observer* referred to other demonstrated possibilities of the hypnosis technique. Dr Stephen Black, who is the holder of a research grant for the work from the Medical Research Council and carried out the demonstration, 'suggested to one subject that he had been using the machine for a week — and what did he now feel about it? The subject immediately complained vigorously about the strain on the back of his neck.

'The hypnotist can take the subject back to his consulting room and suggest to him that he is actually using the machine. The subject then goes through exactly appropriate motions and is convinced that he is using a real machine.' In this way, the investigator can study the machine in its absence. So we might have:

Situations Vacant. In chief engineer's dept., another hypnotic subject is required, to operate imaginary machines. Salary imaginary.

CHARLES JENNINGS

PRODUCTION MANAGER

(Plastics)

For a substantial Group located in the East Midlands and producing a wide range of plastics extrusions including semi-rigid and rigid thermo-plastic sheeting. Initial salary subject to negotiation but not less than £1,500 p.a. plus non-contributory pension scheme and other benefits.

The Production Manager will be responsible directly to the Works Manager for planning and controlling the production of the department according to specified schedules. He will also be responsible for operating in close liaison with sales and technical departments.

Qualifications required are previous experience of plastics extrusions and rigid thermo-plastic sheeting with a sound understanding of modern production techniques and modern plastics machinery. Experience of designing extrusion-head dies will be of considerable advantage.

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MEN *and* MATTERS

A Review of People and Events

by Peter Richards

IN America the trend towards making anything and everything disposable shows no sign of slackening. Someone has calculated that soon there will be no washing up done in the country, since everyone will be eating off disposable plastics plates with disposable knives and forks. One commentator has even cracked that Detroit will solve its economic problems only when it manufactures a disposable car.

The same trend may be present in this country, but it is opposed by a vein of thriftiness in our character. At least in small things. The authorities may spend many millions on disposable rockets, but the Civil Service still zealously uses economy labels on its envelopes.

Perpetual Envelope

Since we have this trait, it is hardly surprising that the Envopak has caught on so quickly. Far from being disposable, this is a 'perpetual' envelope made from I.C.I.'s PVC-coated nylon 'Hydex.' The address is slotted in and it is particularly suitable for organizations which have heavy mailing between branch offices.

This long-life envelope — it lasts about three years — has just been improved by the addition of a simple, effective closure — the 'Envoseal,' which is a flanged metal cap. No expensive or complicated sealing apparatus is involved; it is snapped into position by the despatcher and broken by the receiver with the aid of a metal opener. This 'seal' cannot be taken off without breaking it so that tampering is immediately detected.

Two Audiences With One Film

Although the cinema as such has been in the doldrums since the war, documentary and industrial films have continued to enjoy a good measure of success. Four industrial films have been previewed recently by polymer firms. Bakelite have just produced two excellent films on reinforced plastics. One — called Bambini — is about the production of the Watsonian Bambini side-car, the other — 'Spearhead of a Thunderbird' — shows the production of a highly specialized moulding: the nose-cone of a guided missile.

Although the latter is technically more interesting, Bambini is a clever film because it tackles two audiences without falling between them. It demonstrates the wet lay-up process in sufficient detail to interest a potential manufacturer, and yet the film is simple enough to appeal to scooter owners. Showings have been arranged at scooter clubs throughout the country.

Not So Cut and Dried

I wasn't able to see 'New Minds for a New World,' a film just produced by I.C.I., but one sentence caught my eye in the information they sent me. 'This . . . is a film which does not come to any simple, tidy conclusions.' As I turn over the hand-outs and business brochures on my desk it is a pleasant change to see something that isn't cut and dried, neatly tied up, and sealed, signed and delivered. Usually an all too perfect world comes in with each morning's post.

Admittedly this is a film at one remove from industry. It is an approach towards the problem of increasing our technological manpower, and consists of an unscripted discussion between Chris Chataway and a group of young people who give their views on a scientific career. They go on to hold further discussions with scientists in universities and in industry.

Sell a Little Softly

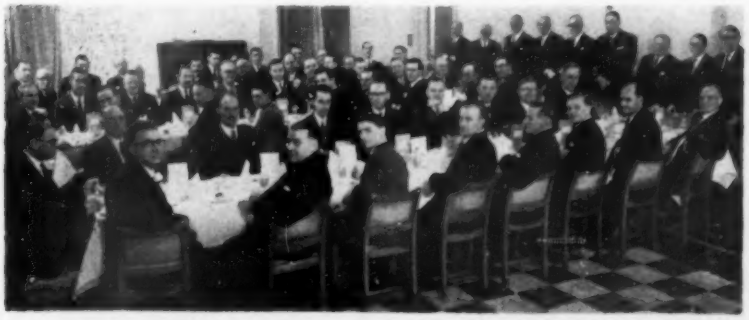
With the English feeling for understatement, I have often wondered why we persist in the hard sell, everything - about - the - product's - perfect approach. This is the main fault of 'The Cycolac Story,' a film made by Borg-Warner in America which has been given several showings in this country by Anchor Chemical, who are the UK agents for Cycolac ABS resin.

In this film within a film a Borg Warner salesman who knows the lot plonks a projector on the desk of a potential client. If all clients produced feed-lines at the rate this one did I'd be on the road tomorrow. There are some good things in this film and the resin comes through as a first-class product — but in spite of, not because of the salesmanship. Perfection is for angels, not advertisements. If things were pictured as a little less than perfect I'm sure our jaded minds would react in surprise, pleasure — and payment.

Fawley Shows a Leg

Captain J. W. Caunce, master of the *Queen Mary*, passes Monsanto's Fawley polythene plant every time he enters or leaves Southampton Water. So the factory's safety committee headed by works accountant J. M. O'Connell, thought him an ideal choice to present awards in their current safety competition.

Taken on a tour of the factory by the works manager, Dr E. W. Body-



Ekco Plastics held their annual sales dinner at Westcliff-on-Sea, following a two-day sales conference on marketing. David Radford, director and general manager of Ekco Plastics, and chairman of the British Plastics Federation, presided

cote, before making the awards, Captain Caunce said that it was a joy to see such modern equipment so safely manned.

'Safety consciousness is only achieved by developing the powers of observation,' he told employees. 'Take a pride in being able to spot hazards before they cause accidents.' He also commented that after going over a polythene plant he would have to revise his navy ideas on what constituted high pressure!

Kennaway Moves to BTR

BTR have appointed A. Kennaway as controller of technical operations — with responsibility for major engineering projects, process and machine experimentation and the development of new techniques relative to plant and factory lay-out, methods and instrumentation in the field of production engineering.

A Cambridge graduate, Mr Kennaway was with I.C.I. Plastics Division for 12 years, and subsequently chief engineer of plastics operations at Metal Box.

Bonded Fibre Fabric Ltd. have appointed P. J. Scally sales manager in general control of home and export sales of Solena and Viscotex bonded fabrics

Pirelli Works Manager

G. Veronesi has been appointed works manager of the Burton-on-Trent factory of Pirelli Ltd. in succession to A. Zancan who has been appointed general manager of a new company being set up in Italy. Mr Veronesi has been assistant works manager since June 1960. Mr Zancan has been chief executive, production, of Pirelli Ltd. since January 1954, during which time the factory has been extensively modernized and extended under his direction. He will be leaving England to take up his new post in January next year.

New Pirelli Director

Sir Leonard Sinclair has joined the board of Pirelli Ltd. He is chairman of the Valor Co. Ltd. and chairman of Fleming and British American Optical Industries Ltd.

Until recently he was chairman of the Esso Petroleum Co. Ltd.

Monsanto's Deputy MD

John C. Garrels jr. of Springfield, USA, has been made a member of the board of Monsanto Chemicals Ltd. and has been appointed deputy managing director. He has been an assistant general manager of the company's plastics division since 1956.

He will start his new job here early next year — as soon as he can get a house.

Mr. Garrels joined Monsanto as a chemical engineer in 1942. He went to the plastics division in 1946 as manager of a plant Monsanto then operated at Lockport, N.Y. In 1955 he was appointed assistant general manager in charge of manufacturing. When he assumed his present position he was put in charge of marketing, research, manufacturing, engineering and personnel relations for the division.

* * *

Mr W. R. Miles has been appointed Midland and South Wales representative for Kay Brothers Plastics Ltd., of Marple, Cheshire, manufacturers of Foamoprene plastic foam. He succeeds Mr A. J. Gittins, who has taken over the North of England territory.

* * *

John N. Codrea has been made plant manager at B. F. Goodrich Iran S.A., a newly organized subsidiary in Teheran.

North British have appointed T. H. Lee sales manager, hose and general products. He was previously with William Warne

Question Corner — 148

(Second Series)

473. What are the essential requirements for a good antioxidant for polythene?

(Answer next week)

Answer to Question Corner — 147

472. The gate in an injection mould is one of the most important features. It has a high resistance to flow and this must be adjusted to the best possible magnitude.

As the plastic flows into the cavity it is filled until the pressure equals that which is transmitted from the plunger and feed system. This pressure must be controlled so that the hot plastic will not flow back out of the mould when the plunger is withdrawn. Solidification should be quick and kept to a minimum without the gate being so small as to impede filling the mould

The gate land is the key to flow control and, generally, the width of the gate may be anything up to the width of the runner, and preferably about 75% of the full width of it. The depth is 0.4 to 0.6 times the thickness of the section of the moulded article where the gate is attached.

Empirical methods have established that the length of the gate land on the cavities nearest the sprue should be twice as long as the gate land farthest from the sprue.

In multiple cavity moulds the flow of the plastic should be balanced so that all the cavities fill simultaneously. If the flow stops at any cavity it might not commence again if the gate is severely restricted.

(Another question next week)

Polly Ester Says . . .

'Chain termination—Fred'll be out in time for Christmas'

½ million gallons daily prove fuel hose

Compoflex Hoses are made by Compoflex Co. Ltd using Hycar nitrile rubber.

Hycar is a reg'd trade mark

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Over four years ago 360 Compoflex hoses were installed at the Manorway Loading Raft of London and Thames Haven Oil Wharves Ltd. Since then they have dispensed half a million gallons of oil and petroleum every day—without needing replacement or repair.

These hoses are made from Hycar. This outstanding nitrile rubber gives fuel hose these unique advantages:

- Unrivalled resistance to oils, solvents, aromatic fuels, petroleum products.
- Greater resilience and flexibility even after years of constant use.
- Easier handling: their light weight saves time and effort.
- Increased durability: they need less frequent replacement, cutting maintenance costs.

Hycar nitrile rubbers are proving their superiority in a host of everyday applications ranging from shoe soles to aircraft fuel tanks.

These are described in a new illustrated booklet No. HI/146
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THREE PACES AND A RAILWAY

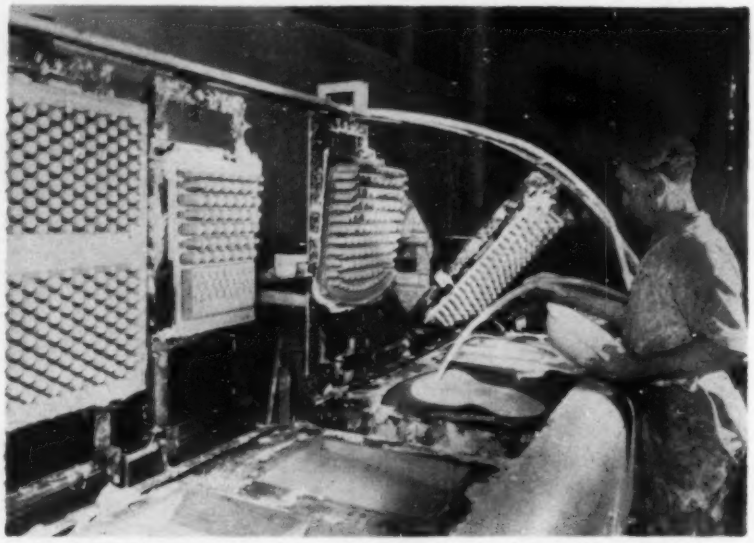
Continued from page 1012

by those, and they include professional conveyor manufacturers, who thought it an impossible project — is in its way typical of Vitafoam Ltd. It is a moving illustration of the independence of thought and action that is inherent in the outlook of the company. 'All right, we'll do it ourselves!' has been a fundamental tenet since its foundation 11 years ago.

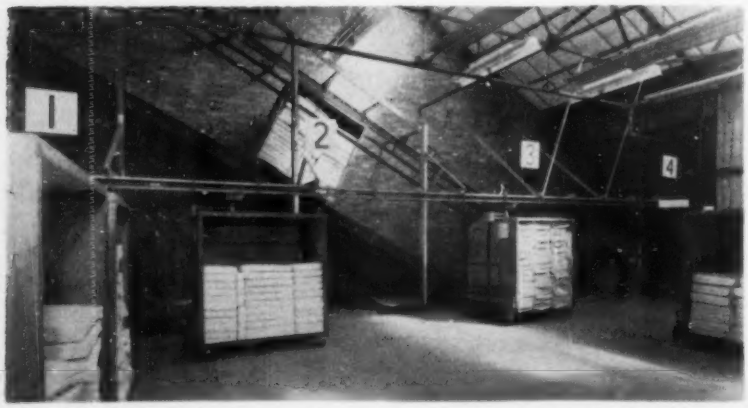
And so 'McGee's Railway,' and the rolling stock, was invented, designed, fabricated and installed. It plays a most important part in achieving the 'three paces' aim. It is likewise significant that the chain, almost the only part not made by the company's engineering shop, circulates to no haphazard time-table. As with all operations at Don Mill, the time allowed for a truck to complete one circuit has been precisely and specifically calculated.

Simple Sensation

Many of man's most effective devices are characterized by a simplicity that makes people wonder how anything so obvious could have been previously overlooked. One of the company's newest and most promising products is in this category; the Vitaweb resilient seating platform. Displayed for the first time at the recent Commercial Motor Show, the platform is comprised of a 'web' of $\frac{3}{32}$in. high tensile strength natural rubber suspended by bonded brass clips from hooks in the seat frame. It sounds simple and it is simple but it rightly caused a sensation at the Show. Fixed in openings in the seat base and surmounted by Vitafoam cushioning, the platform gives a notably more stable and comfortable ride. Another advantage is that the resilience of the platform allows the use of thinner foam cushions, up to as much as 1in. thinner, and still gives greater comfort than the thicker cushion. Although the first platforms are relatively small, they are capable of development for many other uses; one of the most promising being for beds. For this and similar purposes, the platforms can be made up to about 26in. wide without the incorporation of any other materials. The name Vitaweb is also used for the natural Vitaweb platform, and webbing is now made in one of the two Soudan Mills, acquired earlier this year with the aid of a £280,000 Government grant. Here, too, brass clips for the webbing are stamped out, and rubber bonding adhesive applied by machine. These Mills, each just about as big as Don Mill, are separated from it by no more than a couple of roadways. The company intends, and has planning permission, to extend the tow-truck conveyor by bridges to the two new Mills, thus linking all three plants.



Foamed latex is poured into the moving moulds on one production line. The mould in the background is halfway to closure



'Rolling stock' on the tow-truck conveyor reaches the despatch department The half-mile-long conveyor connects all departments

Another of the company's activities is also carried on in Soudan 2. Here a semi-automatic machine produces continuous hessian-backed carpet underlay in 4ft. 6in. widths. Incorporated in this is foam scrap, reduced at Don Mill to crumb of about 20 mesh, and tyre scrap similarly ground down. Adjacent is a bigger and fully automatic carpet underlay machine, controlled from a large and impressive panel, which produces underlay 9ft. wide at a rate of 12 sq. yd. per minute. Through these uses, and the company's Fillofoam — foam scrap sold in bags — almost all scrap is utilized.

Latest addition at Soudan 2 is a vinyl foam plant, so big it had to come in through the roof, made by Girdler, USA (a subsidiary of Union Carbide). The largest of its type made the plant is capable of turning out 30 tons of PVC foam per week. Vitapol, Vitafoam's trade name for their vinyl foam, will go mainly for upholstery in cars but will also be used for wall coverings and suchlike. Made in sections from $\frac{1}{16}$in. upwards in thickness, cut from much thicker pieces by an aldrecht burner slitting machine it will be welded to PVC film, but this will not yet be done by Vitafoam.

Close watch on quality is maintained by the company's process control laboratories, at present being extended like most other activities at Middleton. Tests regularly made include determination of compression set characteristics; physical properties,

Continued on page 1025

We take a deep breath and say

. . . Sports goods . . . Schnorkel masks . . . Swimfins . . . Wringer rollers . . . Household articles . . . Hospital sheeting . . . Shoes . . .

We take a deep breath and say, Cariflex,

. . . the light coloured types, which, when used for pure white and bright coloured products, are economical in their requirements of expensive colourants.

We take a deep breath and repeat Cariflex,

. . . the range of general purpose Styrene-Butadiene rubbers that are meeting the requirements of the rubber industry.

Dry rubbers and latices for

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- Belting
- Blown sponge
- Camelback
- Closure and can sealing compounds
- Coated fabrics
- Fibre binding
- Floor tiles and coverings
- Foam rubber
- Footwear
- Hard rubber
- Hose
- Hospital sheeting
- Mechanical goods
- Moulded and extruded products
- Paper and fabric impregnation
- Pressure sensitive tape
- Shoe soles and heels
- Sporting goods
- Toys
- Tyre cord dips
- Tyres
- Upholstery and rug backing
- Whitewall tyres
- Wire and cable insulation
- Wringer rolls

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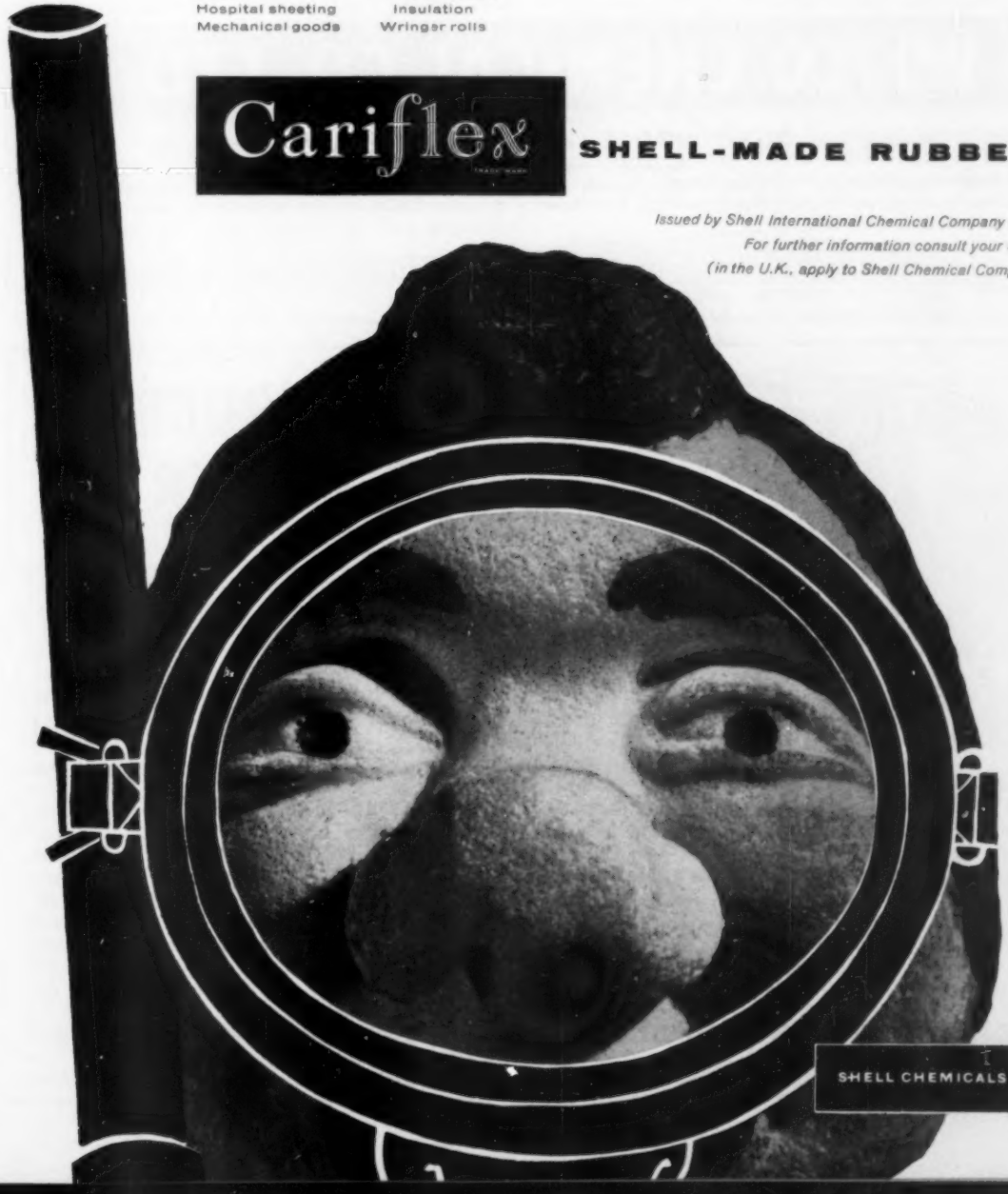

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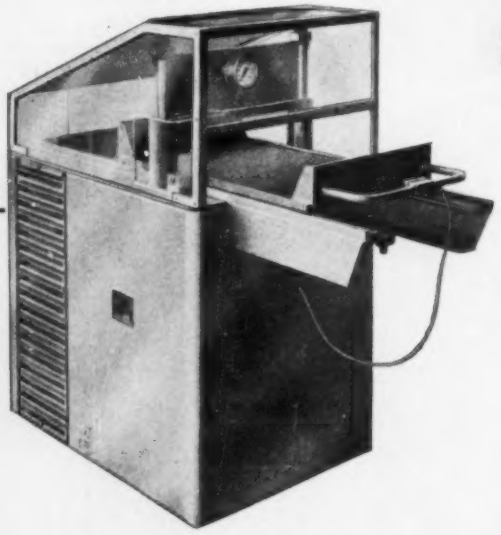

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Round the World

GERMAN CABLES—FRENCH BUTYL PIPE—RUSSIAN POLYSULPHIDES

NEWS comes from Japan of a new material developed there. This is a resin claimed to be tougher and more resistant to heat than acetal resin which is expected to be used for making gears, wheels and machine parts. The centrifugal casting of plastic pipes on the lines of the techniques used with cement and metals has been recently patented in Germany. The bulk of the casting is controlled by the quantity of solution admitted to the mould. Different mixtures can be employed to produce a material with the required properties. Sticking to the mould is prevented by the use of a metallic flux. Hardening takes place in 15 to 20 minutes.

Production of diphenylol propane, employed in the manufacture of epoxy resins, recently began in a large works in Australia. Phenol and acetone are used in the manufacture of this material, being reacted in a sulphuric acid medium, the acid being recovered for reuse later. Research workers in Czechoslovakia have produced three new antistatic water repellents which are said to be specially suitable for fabrics based on polyamide, polyester and acrylic fibres. Two of these employ a combination of stearic acid and chromic chloride in alcohol, the third substitutes oleic acid for stearic acid.

Cheaper Detergent

Regarded as a remarkable packaging invention in France is a plastic bottle, which is already proving economical and popular for use as a container for detergents. The method of manufacture is unique. A fully automatic machine, operated in the packager's own works, produces thirty inexpensive fin-sealed containers a minute, each from a single sheet of polyvinyl chloride. As detergent packages inevitably have a short service life, the maker needed a material less durable, elaborate and expensive than glass or blow-moulded polythene. It is claimed that the low cost of this new container has made possible the sale of the detergent at rather more than 30% less than the cost of its closest competitor.

A French company has placed on the market a butyl gas pipe for propanized air, town gas, natural gas, etc. In addition to the good resistance of butyl to ageing, light, heat, oils and vegetable fats and to chemicals such as vinegar, bleaching liquids, detergents and most acids, it has very low gas permeability.

The pipe is sold in coils of about 25 metres, engaged in a patent bag which, while protecting it, makes stocking and handling easy. A metric mark engraved on the tube enables quick distribution to be effected and eliminates the tedious work of measuring.

A catamaran sailing boat has been exhibited in Europe which is the product of a French manufacturer. It has pneumatic floats of elliptical form and dynamic contour, possessing within them a second safety float of patent type. According to the constructor, this pneumatic element consists of several tubular elements of cylindrical section, broader at the centre than at the ends. In this way high rigidity is achieved with only low pressure.

Orientated Pipes

A heat-resisting rubber from Japan is obtained by the polymerization of acetaldehyde using aluminium oxide as a catalyst.

A copolymer of styrene, acrylonitrile and butadiene is being manufactured in France. It is of importance to the electrical, automobile, refrigeration, toy and public works industries. Hungary has patented a process for the impregnation of cables which guarantees perfect adhesion of rayon.

A method of manufacturing low pressure polythene pipe by biaxial orientation has been introduced in Germany. This orientation improves the solidity of the pipe walls, allowing thinner walls to be used for a given pressure. The process consists of passing the non-orientated pipe into a metallic tube of slightly larger diameter. This tube is then immersed in a heating bath which raises the polythene to a temperature close to the melting point. The pipe is removed from this bath and passed into a forming device, then into a cooling system, where it is brought to the desired dimensions.

Anticryptogamic protection of plasticizers and rubber mixtures with a product having a basis of laurylpentachlorophenol has been developed in France. It is an oily brown liquid, odourless, non-corrosive, non-toxic, soluble in solvents, non-polarized, and is used in plastics, rubbers, paints and varnishes, textiles, ropes and cordage.

Two German patents cover mobile electric cables with a woven case, and shoes with a sole fixed by vulcanization. The mobile insulated cable of rubber or thermoplastic material is provided with a spiral metallic covering without joints arranged on the core of the cables. The shoes have an intermediate lining sole either porous or heavy, secured to the body and the first sole by vulcanization. The outer edge of this sole is extended over the entire edge of the shoe up to the lower face of the walking sole.

The French have patented a process for making special joints, membranes and linings resistant to gaseous halogen compounds. The process employs elastomers of purified natural rubber and of certain purified butadiene-styrene copolymers. The joints produced are said to resist gaseous compounds derived from fluorine and chlorine.

Liquid Polysulphides

In the USSR an investigation has been carried out into the chemico-rheological aspects of liquid polysulphide polymers when vulcanized. The process of vulcanization in liquid polymers allows the oxidation of terminal mercaptans to give disulphide unions or the reaction of these groups at the end of the chain with some vulcanizing agents. Several types of vulcanization carried out under the same conditions in a liquid medium (oxidation by metallic oxides, organic peroxides and hydroperoxides, *p*-quinonedioxime) have been studied. Vulcanization has also been realized in the presence of diisocyanates.

Three new oil-fired furnace blacks have been introduced by the French. One of these has properties similar to channel blacks but also allows rapid vulcanization. Another has small particles and possesses properties adequate for its use in products demanding wear resistance. It is of low hardness, low modulus, and high abrasion resistance. A third type has properties as good as, or better than semi-reinforcing furnace blacks.

The Germans have introduced to the market a stabilizing agent for

DIVISIONAL PRODUCTION MANAGER

(Leathercloth and Plastics)

Applications are invited for this senior appointment with a major Group manufacturing a wide range of plastic-coated materials located in the East Midlands. Initial salary will be not less than £1,500 p.a. plus non-contributory pension scheme and other benefits. There are substantial prospects of advancement.

The Divisional Production Manager will be responsible directly to the Works Manager for the management of the unit which produces a wide range of products for the furniture, automotive, travel, utility and fancy goods industries. He will have particular responsibility for planning and controlling production and for maintaining the closest liaison with Group technical and sales departments.

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foams. This is said to prevent latex foam from relapsing before its coagulation, to guarantee a prolonged period of application, and to confer on the finished foam a regular cellular structure. This product is particularly suitable, the makers suggest, for making thin plates and for textiles coated with latex foam.

The introduction of phosporus compounds as plasticizers in plastic materials and varnishes has been known for a considerable time. Recent researches have been into the preparation of plastic materials and varnishes in which the phosphorus would form an integral part of the macromolecule, so rendering the materials refractory at high temperatures, nonflammable, and conferring on varnishes and paints properties of adhesion, even to metallic surfaces. In these macromolecules, the French have found, phosphorus can be either in the side chain or in the main chain. Both are obtained by polymerization, polycondensation or polyaddition.

A continuous vacuum forming process has been developed in France. Operating on a rotary system, this allows cheap and rapid forming of both plasticized or unplasticized materials.

New Fluid Mixing Company

A NEW company, Lightnin Mixers Ltd., Poynton, Cheshire, whose formation was announced recently, unites under one name two well-known producers of fluid mixing equipment and will make available a very comprehensive range of mixers.

These two companies are Stockdale Engineering Ltd. and Mixing Equipment Co. Inc. of Rochester, New York, who are one of the largest firms in the world manufacturing industrial mixing equipment.

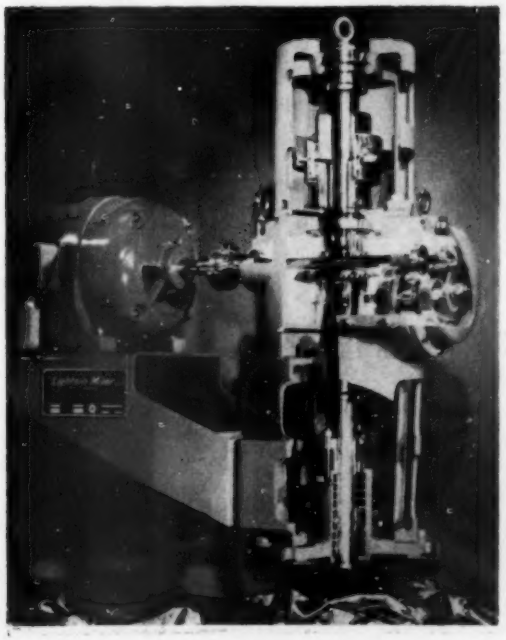
The new company will manufacture the complete range of mixers derived from both parent companies which covers all sizes from small 1/30hp laboratory models to 500hp heavy duty industrial machines.

A thirty-minute 16mm. film in sound and colour is available showing the fluid mechanics of mixing impellers and mixing processes, demonstrating three accurate methods of scaling-up from laboratory or pilot plant to commercial size and giving a brief review of basic principles of modern mixer design.

Rubber Cistern

An automatic cistern made from resin bonded rubber, which is said to be specially suitable for installations exposed to the weather, has been introduced by Shires of Guiseley to augment their existing 'Lynx' range of sanitary equipment.

The cistern is being made in one, two, three or four gallon sizes; so far only the first two sizes are obtainable in resin bonded rubber.



Cut-away view of a lightnin - type TEC mixer drive, showing the hollow quill construction. This unit reaches a very high standard both in design and performance

IRI Golf

LONDON SECTION'S AGM

D. Davies was re-elected captain of the IRI Golfing Society, London section, at the annual general meeting held at Whitehall Court, S.W.1, recently.

L. B. MacQueen was re-elected vice-captain, and C. D. L. Smith and B. R. Cuzner joint honorary secretaries. J. E. Pilbrow resigned his post of honorary treasurer and this job has been taken over by the joint secretaries.

Two members of the committee were retired by rotation, and their places were taken by J. E. Pilbrow and R. A. McEwan.

Meetings arranged for next year are: March 18-19: Spring weekend—Huntercombe Golf Club; April 13: Penfold Trophy—West Hill; May 10: Captain's Prize—Porters Park; June 10-12: Wallwork Cup—Gleneagles; July 11: Worthington Cup—Moor Park; September 20: Sorbo Bowl—Combe Hill, and September 30-October 1: Autumn Meeting—Highwoods.

Annual dinner pictures: page 1029

THREE PACES AND A RAILWAY

Continued from page 1020

tensile strength, modulus, elongation at break of the webbing and so on. Besides running regular tests on compounding in progress, the laboratory includes even tests on the efficiency of the washing process of finished products. With increasing automation, maintenance of plant and machinery plays an ever greater part. A wages bill for this alone of about £2,000 a week gives some indication of the amount of work done by this department.

Activities are not confined to this country. Vitafoam has an associate company, Perman-Air Rubber Co. (Pty.) Ltd., in Bulawayo, Rhodesia (*RJIP* August 13 1960), and a depot in Dusseldorf. In the UK, a subsidiary company is Genefoam Ltd., which deals with handbuilt latex foam units and cushions for the retail trade.

From the first, life for those in Vitafoam has been an adventure. It looks like continuing, for, with all the production capacity — and space for more — they are in the throes of entering a new field. In the chairman's office are the prototypes of neatly designed, effective — and simple — glass fibre chairs. They go extremely well with foam rubber cushions.

The Ulster Weaving Co. Ltd. has moved to Silver House, 31/35 Beak Street, London, W.1.

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Plastics in Packaging

PI AND IRI JOINT MEETING

DR G. SWIFT of Metal Box gave a paper on plastics in the packaging industry at a joint meeting of the PI North Western Section and the IRI Liverpool held in Liverpool.

He emphasized the importance of the subject by showing that in 1958 between one-quarter and one-fifth of the total thermoplastics produced in the UK were used in packaging. Dr Swift put the processing of thermoplastics for packaging into six categories.

1. Extrusion in the form of lay flat tubing or extruded sheets, followed perhaps by heat welding to form bags. Low density polythene mainly used.

2. Extrusion coatings: for example polythene film extruded on to cellulose film and pressed together.

3. Laminated film: for aluminium foil/adhesive/Pliofilm system.

4. Extrusion followed by blow moulding to make bottles.

5. Injection moulding of small articles such as aerosol valves, container caps and cups, using polystyrene, nylon and cellulose acetate.

6. Vacuum or thermo-forming thin walled articles such as disposable cups and trays. Polystyrene and high density polythene may be used.

Dr Swift enlarged on the value of laminations in packaging, showing how the combination of two or three film materials can produce a packaging system which is heat sealable, gas impermeable, odourless, tasteless and where the print does not contact the packed goods or the hands. Some of the materials used in laminates, he said, were paper, polythene, PVC, Saran, Pliofilm and aluminium.

A recent development was heavy gauge polythene sacks up to 10 thou. thick holding perhaps 50-70lb. of product. Interest in this type of sack had been shown by the plastics, chemical and fertilizer industries.

Questioned on how to counter slipping and help bag shaping, Dr Swift said that air extraction could be used, while gussetted sacks would make shaping easier. All these problems were being considered.

Since J. Kenyon, chairman of the NW Section PI was abroad on business, thanks were expressed by Mr Wood, chairman of the Liverpool Section of the IRI.

BVC.

Changes at British Xylonite

A NUMBER of changes, which will be effective on January 1, have been made on the boards of British Xylonite and its subsidiary companies.

C. E. M. Coubrough is to retire from the managing directorship and executive duties, and from the boards of the Xylonite divisions. He remains a director and deputy chairman. C. M. Glover is appointed managing director, and chairman of the Xylonite divisions. D. R. Walters is appointed financial director and will retire from the position of secretary of British Xylonite and its divisions. His successor as secretary will be P. W. J. Simcox. S. Booth is appointed a director.

BX Plastics

C. M. Glover is appointed deputy chairman, and retires from the position of managing director. S. Booth is appointed managing director, and C. E. M. Coubrough retires from the board. D. R. Walters retires as secretary, and is appointed a director, while P. W. J. Simcox is appointed secretary. C. M. Edwards retires as general sales manager and is succeeded by I. F. E. Coubrough.

Bexford

Sir Laurence Merriam retires from the board, and S. Booth is appointed in his place.

Plastic Cutters

C. M. Glover and C. M. Edwards retire from the board, and are succeeded by S. Booth and N. A. Masters.

Raychem UK

This is a new company formed jointly with Raychem Corp. of USA and BX Plastics. Dr J. A. Hetherington will be a director and general manager, while S. Booth will be a director. Alternate directors are P. S. Adamson and P. W. J. Simcox. A. W. Blackler will be secretary.

Expanded Rubber

C. M. Glover is to be chairman, and C. M. Edwards managing director, while C. E. M. Coubrough retires from the board.

FBRAM Second Advertising Course

E. S. H. Janes (Dunlop), chairman of the FBRAM publicity committee which organized the successful second course on marketing and advertising held recently, chatting to W. B. Yeadon (J. H. Fenner). Some of the other delegates to this two-day conference are pictured below

Plantation Commentary

MATHISON FORCED TO RESIGN FROM RPC

by our Malayan Correspondent

ONE of the best-known leaders of the producing side of the natural rubber industry, J. C. Mathison, has been virtually forced to resign from the committee of the Malayan Rubber Producers' Council by the Government. It is the first time that action of this kind has been taken by the Government or that the Government has attempted to interfere in this way with the working of one of the industry's representative bodies.

Mr Mathison is a former president of the United Planting Association of Malaya and before the recent constitutional changes was a member of the Federal Legislative Council. He is the manager of an estate near Kuala Lumpur.

Airport Controversy

The controversy over the siting of the new International Airport (referred to in the last Plantation Commentary) led to the Government's objection to Mr Mathison who had become alarmed that the airport would encroach on valuable experiments being carried out by the Rubber Research Institute. The Government claim that an assurance was given to Mr Mathison and the Rubber Producers' Council that no harm would come to the RRI experiments but that despite this Mr Mathison wrote letters to the Press alleging that there was still considerable danger and urging the rubber industry to protest strongly against the Government's intentions.

A few days after Mr Mathison's letter appeared in the Press, his action was strongly criticised by the Minister of Commerce and Industry, Inche Mohd. Khir Johari. His action was called irresponsible.

This was followed by a letter from the Minister of Commerce and Industry stating that the Ministry would sever all connexions with the Rubber Producers' Council unless Mr Mathison was removed. The council is the main channel between the producing side of the industry and the Government.

Mr Mathison then sent in a letter of resignation to the council and also resigned from the six government committees connected with the rubber industry. The chairman of the RPC said that Mr Mathison's resignation was accepted 'with regret.'

Mr Mathison, who has been closely connected with the planting industry for 30 years, said that he had resigned under pressure. He said that he might issue a statement later, and added: 'One is a bit frightened to talk now.'

In the official organ of the United Malays National Organization, the party to which the Minister belongs, Inche Mohd. Khir was quoted as saying, 'Let this be a warning to all foreigners who wish to serve this country. They should keep their promises. We are willing to discuss and exchange views only with people who keep their promises.'

A Matter of Persuasion

Plans have now been completed for a fresh publicity drive to encourage replanting by Malayan smallholders, the small men whose inactivity gives the Government and leaders in the industry so much concern. The smallholders are already paid to replant their rubber, though this is not as munificent as it sounds, as the $600 an acre granted to the smallholders largely comes from a cess on the export of rubber from Malaya. Experience has shown that this is not enough and that they have to be persuaded, cajoled and occasionally verbally bullied into putting in their applications for replanting aid.

Considerable Gap

The gap between the smallholders and the estates is considerable. In July, the latest month for which figures are available, 23,648 tons out of the 36,706 tons of rubber produced by estates came from high-yielding trees. In contrast, of the 1,500,000 acres of smallholding rubber, by the end of last year only 327,000 acres had been replanted after a considerable effort by the Replanting Board. When natural rubber is being consistently sold for the same price or less than that of synthetic — which, it is generally agreed, must be the case eventually — the smallholders with their old trees will be in a poor position compared with the estates.

The political and economic complications that will arise then are part of the reason for the urgency with which replanting officials and others are campaigning for the smallholders' interest.

This year the emphasis will be almost entirely on a programme of 'ramah tamah' (literally 'get-togethers') of which 580 are planned, the largest number in Johore, South Malaya. These get-togethers between the replanting officials and the smallholders are now known to be the most effective means of putting the replanting message across and they are held wherever it is possible to gather the villagers. Some will be held in coffee shops, others in community halls, some in the headmen's houses and a few, when all else fails, under the nearest convenient tree.

Shrewd Leaflets

To advertise them, hundreds of posters are being produced which ten days before the 'ramah tamah' will be posted in the villages to create interest. Thousands of leaflets, shrewdly depicting 50-cent pieces flowing into a latex cup and a handful of notes pinned to a rubber tree, are being printed for distribution a day or two before the meetings.

In each village, the get-togethers are usually conducted by a team made up of the smallholders' advisory officer of the Rubber Research Institute, a representative of the District Officer, a representative of the Smallholders' Association, an agricultural officer and an information officer. The meetings frequently last until 1 and 2 a.m. in the morning.

The value of the get-togethers is

This rubber tree on Bukit Raja Estate, in the Klang district of Selangor, at 60 years old, is the oldest in Selangor State and one of the oldest in Malaya. It is also one of the biggest. Here delegates to the recent rubber research conference in Malaya are shown grouped around it.

that the teams frequently find themselves on the receiving end and get a valuable insight into the problems that certain features of the scheme present to the smallholders. Discussions often touch on the reason why the Replanting Board enforces certain standards and show up misunderstandings that result from these necessary regulations.

Form Filling

At least one member of the team is always kept busy explaining how forms should be filled in.

The get-togethers are not a new idea. They have been used before but for the next 12 months the 'ramah tamah' programme has been greatly expanded.

In the past this type of replanting publicity has usually been concentrated on the last few weeks of the year to persuade the smallholders to put in applications for replanting in the following year but the present programme calls for a year-round effort.

By this means, it is hoped to keep replanting constantly before the villagers. Another means of doing this is the distribution of 'comic books' to children and others, simple strip cartoons which show the wisdom of replanting and the awful fate of those who neglect to do so. The idea was suggested by the Prime Minister, Tengku Abdul Rahman, who pointed out that all children take their books to their parents to read.

In addition to these measures, about 22 exhibitions are planned during the next 12 months at agricultural fairs and elsewhere.

Not Wildly Optimistic

Replanting officials are by no means wildly optimistic about the probable success of this 12-month campaign although they do not expect results to be poor. Two previous campaigns are thought to have attracted the attention of those who can easily be persuaded to replant. This third campaign is likely to be hard going all the way.

The replanting officials have one trump card, however — the progressive smallholders who replanted some time ago and are now getting the increased profit that comes from high-yielding rubber.

Where possible a local boy who has made good will be included in the teams that conduct a get-together and experience suggests that he is one of the best advertisements for replanting.

Intelligent Concern

According to J. M. F. Greenwood, of the Smallholders' Advisory Service, these progressive smallholders who took to replanting some time ago must also generally be credited with an intelligent concern for their new rubber. There are still a few smallholders who used their youngest child to do the tapping, but most of them took pride in their new high-yielding trees and were making a genuine effort to manage them in the best possible way. They were being well-tapped following the recognized method of a half-spiral cut and tapping on alternate days.

IRI Golf: London Section's Annual Dinner

Some of those present at the highly successful IRI London section Golfing Society's annual dinner *(left to right)*: **1, W. J. Garner (late of P. B. Cow) and J. H. Carrington (Anchor); 2, Joint secretaries B. R. Cuzner and C. D. L. Smith (Wilfrid Smith); 3, A. Smales (Philblack), F. D. Davies (Davies Tyre) and W. J. Nave (India Tyre); 4, A. H. Padgham and E. H. V. Jorey (Consolidated Zinc); 5, R. S. Shillingford and K. Lindsay; 6, A. Ryan (late of Ioco) and T. W. W. Davie (North British); 7, B. J. Finnie (George White), D. Davies (Davies Tyre) and C. N. Weller (Shell Chemical); 8, L. V. Jennings and E. E. Stedman (both of R. W. Greeff); 9, A. McCulloch and A. E. Andrews (both of Expanded Rubber); 10, A. G. Robinson (Expanded Rubber), J. F. E. Ruffell (Durham Raw Materials), H. P. Goodall (Expanded Rubber) and L. B. MacQueen (Cabot Carbon).** *A report on the annual general meeting which preceded the dinner is given on page* 1025

Rubber and Plastics Stock Market

A REVIEW OF PRICES AND TRENDS

LIFE'S been difficult in the stock market over the past week or so. With buyers playing the game of 'wait and see,' jobbers have had one of the quietest times so far this year. With nothing to do and plenty of time to think, they have found themselves gripped in a depression which up until now they have failed to shake off. At the moment, although it appears that the gloom has been overdone, the outlook for the Christmas trading period does not look all that rosy.

The cut in the Bank Rate to 5% hardly came as a surprise and was taken very calmly. Prices which usually make some kind of upward response after just such an announcement did, in fact, end that particular day down on balance. Last week was a very bad one for investors with the *Financial Times* industrial ordinary index showing a loss of 7.1 points and one of 10.2 on the account. This means that some substantial losses will fall to be met next pay day which falls five days before Christmas.

Meantime there is still plenty of goods news from the boardrooms. The directors of TURNER AND NEWALL, for instance sprang a surprise by beating their dividend forecast. They sent word that it was to be 12% against the earlier promise of 11¼%. It compared with last year's handout of 10%. Trading profits have gone up £1.76m. to £13.64m., after depreciation, etc., which was down at £3.39m.

From the mighty DISTILLERS' group came news that half-year profits had improved to £15,922,000 against a £14,986,000 for the similar period last year. The directors pointed out that the rate of profits tax has been increased since the beginning of April and as a result net profits for the period under review was not significantly higher than that of the previous year. The pattern of trading during the second half of the current year has not shown any material change up to the present time. All branches, however, are experiencing keener competition and the tendency is to somewhat lower profit margins.

Dividend from the BRITISH INDUSTRIAL PLASTICS firm is going up by an effective 4¾% to 16% for the year. Group profits have increased from £1,113,026 to £1,484,185, and the net taxed balance from £445,616 to £589,819.

In contrast, news from the RUBBER IMPROVEMENTS company continues to be disappointing. Again shareholders are to go without a dividend. Against the profit of £63,678 last time there is now a loss of £66,422. But chairman Mr J. Lewis now says that as a result of reorganization the group as a whole is now no longer operating at a loss.

Share Price Movements

Par Value	Company	1960 High	Low	Nov. 25	Latest
£1	A.E. Ind. Ord.	67/-	39/6	41/9	39/6
5/-	Albright & W. Ord.	34/3	25/9	27/6	26/9
£1	" " " 5% Pref.	17/3	15/3	15/9	15/6
5/-	Anchor Chemical Ord.	18/7½	14/9	16/-	16/-
5/-	Andersons Rub. Ord.	—	—	3/-	3/9
£1	Angus Geo. Ord.	60/6	34/9	59/6	58/9
5/-	Ault & Wiborg Ord.	28/-	20/-	27/9	26/9
£1	Avon India Rubber Ord.	46/6	30/-	33/9	30/-
£1	" " " 6% Pref.	20/-	17/6	18/9	18/9
10/-	Bakelite Ord.	62/6	39/9	46/3	44/-
£1	" 6% Pref.	19/3	16/9	18/-	18/-
£1	Baker Perkins Ord.	46/6	40/-	43/3	42/-
4/-	Bank Bdg. Rubber Ord.	4/3	2/3	2/6	2/6
4/-	Bettix	—	—	—	7/7½
4/-	Brammer H. Ord.	18/6	16/9	18/1½	16/9
10/-	Bridge, David Ord.	66/6	53/6	62/6	58/9
5/-	Bright, John Ord.	18/6	14/9	16/3	14/9
5/-	Brit. Blting. & Asb. Ord.	—	—	19/-	18/7½
£1	" " " Pref.	—	—	15/9	15/9
2/-	Brit. Ind. Plas. Ord.	12/1½	5/3	9/4½	8/9
2/-	" 10% (tax free) Pref.	4/9	4/3	4/6	4/6
£1	British Xylonite Ord.	67/-	50/6	65/-	60/6
£1	" " 5% Pref.	18/9	14/-	14/6	14/6
£1	BICC Ord.	61/3	47/6	50/-	48/6
5/-	BTR Ind. Ord.	17/9	9/9	17/-	14/9
£1	" " 7½% Pref.	24/3	21/3	22/6	21/9
5/-	Cole, E. K.	31/9	18/-	18/-	18/9
£1	Courtaulds Ord.	59/4½	42/-	42/9	42/-
£1	" 5% 1st Pref.	17/9	15/-	16/-	15/3
£1	" 6% 2nd Pref.	21/-	18/-	18/9	18/3
4/-	Cow, P. B. Ord.	9/9	6/9	7/3	7/9
£1	" " 5% Pref.	15/6	14/-	14/6	14/6
1/-	Dannimac Mfg. Ord.	14/6	9/-	14/6	11/9
10/-	De La Rue Ord.	78/6	47/9	51/3	54/4½
£1	" " " 3½% Pref.	12/-	10/-	11/-	10/6
10/-	Distillers Co. Ord.	46/-	32/9	39/3	39/-
£1	" " 6% Pref.	22/-	19/6	20/-	20/-
£100	" 5% Conv. Loan	£96	£94	£94	£94
£100	" 5¼% Unsec. Loan	£97	£86	£87½	£86
10/-	Dunlop Rubber Ord.	30/6	19/9	20/9	20/-
£1	" " 5½% Pref.	19/-	16/3	16/6	16/3
£100	" 3½% 1st Debs.	£78	£68	£70	£70
£100	" 4½% 2nd Debs.	£87	£77½	£79½	£77½
£1	Eng. Elect. Ord.	53/6	30/9	30/9	31/-
4/-	Ebonite Cont. Ord.	14/3	9/3	10/-	9/9
£1	English China Clays Ord.	95/-	69/-	86/3	86/-
£1	Goodyear Tyre 4% Pref.	12/9	10/9	11/6	11/6
5/-	Greeff Chem. Ord.	35/-	23/6	25/6	25/-

Par Value	Company	1960 High	Low	Nov. 25	Latest
10/-	Greeff Chem. 5½% Pref.	9/-	8/-	8/-	8/-
5/-	Hackbridge Hldg.	8/7½	5/3	6/3	5/7½
4/-	Greengate & Irwell Ord.	6/6	5/3	5/7½	5/6
£1	Harrisons & Crosfield Dd.	64/-	49/6	50/-	50/3
1/-	Hunt & Moscrop Ord.	2/9	1/6	1/7½	1/7½
£1	Imp. Chem. Ord.	75/3	54/3	67/1½	65/3
£1	" " 5% Pref.	18/-	15/6	16/3	15/9
£100	" 4½% Unsec. Loan	£89½	£80½	£82½	£81½
£100	" 5½% Conv. Loan	£212½	£90xc	£92½	£93
1/-	Kleemann (O. & M.) Ord.	11/6	8/3	9/4½	9/-
£1	" " 6½% Pref.	19/-	17/-	17/6	17/-
5/-	Laporte Ind. Ord.	33/6	21/3	28/9	27/-
£1	" " 7½% Pref.	24/3	23/-	23/3	23/3
£1	Leyland & Birm. Rubber Ord.	63/-	46/4	50/-	47/-
£1	" " " 6% Pref.	19/-	17/6	18/9	17/6
2/-	London Rubber	14/9	11/-	14/-	14/-
£1	" 6% Red. Cum. Pref.	20/-	18/-	18/-	18/6
£1	McKechnie Bros. Ord.	71/6	57/-	61/10½	59/-
£1	" " 'A' Ord.	69/3	55/-	59/-	55/-
£1	" " 6% Cum. Pref.	18/-	16/-	17/-	17/-
5/-	Monsanto Chem. Ord.	31/-	23/-	28/9	25/6
£1	" " 3½% Pref.	12/9	12/-	12/6	12/-
£100	" " 6% Debs.	£103½	£97½	£98	£99
5/-	Miles (H.G.) Holdgs. Ord.	11/3	8/9	10/-	8/9
£1	North British Rubber	21/3	16/-	17/1½	17/1½
5/-	Northwestern Rubber	—	—	12/-	12/-
5/-	Plastic Enginrs. Ord.	30/-	20/-	29/3	28/9
5/-	Redfern Holdings Ord.	5/9	3/1½	3/3	3/4½
2/-	RFD Ltd. Ord.	6/6	3/4½	3/6	3/7½
£1	" " 5½% Pref.	14/6	12/9	13/9	13/9
2/-	Rubber Imp. Ord.	7/9	3/1½	3/6	3/6
2/-	" " 'A' Ord.	7/-	3/-	3/-	3/-
£1	" " 5% 1st Pref.	15/-	11/3	12/3	12/3
5/-	Rubber Reg. Ord.	19/3	16/9	18/6	16/9
4/-	Shaw Francis Ord.	27/6	17/3	19/-	17/3
2/-	Silentbloc Ord.	13/3	8/7½	8/10½	8/7½
5/-	Storey Bros.	41/9	28/3	37/6	35/-
2/-	Sussex Rubber Ord.	2/3	1/3	2/-	2/-
5/-	Sutcliffe Speak Ord.	15/9	11/-	14/-	14/-
£1	Turner & Newall Ord.	60/10½	48/3	50/6	52/9
£1	" " " 7% Pref.	25/-	21/9	22/3	22/1½
5/-	Universal Asbestos Ord.	50/-	24/-	26/6	24/6
5/-	Viscose Dev. Ord.	16/6	14/9	16/-	16/-
5/-	Warne W. (Holdgs.) Ord.	18/9	14/9	15/-	15/-

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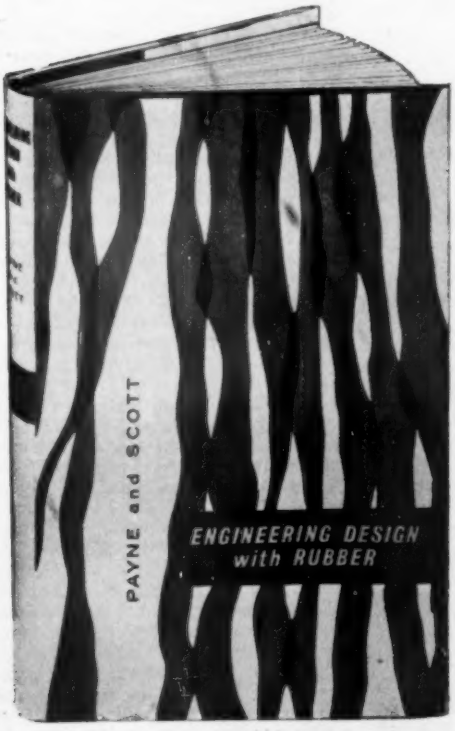

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Rubber Statistics

WEST GERMANY — NIGERIA — MALAYA

WEST GERMANY'S rubber tyre production in October remained at a high level totalling 20,303 tons, according to the Federal Bureau of Statistics.

This compared with a production of 20,778 tons during September, and brought the total for the first ten months of this year to 192,612 tons against 166,416 tons (without the Saar Region) in the corresponding period of last year.

Output of other hard and soft rubber goods during October was also fairly steady at 23,832 tons, against 23,924 tons during the previous month. In the first ten months of this year, it amounted to 234,177 tons against 196,224 tons in the corresponding period of last year.

Imports of natural rubber and rubber sole crepe during the first nine months of this year totalled 108,209 tons, including 63,324 tons from Malaya, 9,203 tons from Thailand, 9,150 tons from Nigeria, 7,200 tons from South Vietnam, 6,278 tons from Indonesia and 5,550 tons from Ceylon. The Congo sent another 52 tons of rubber during September, making total exports to West Germany so far this year 2,532 tons.

Imports of synthetic rubber during the first nine months of this year amounted to 37,024 tons, including 25,030 tons from the United States, 5,405 tons from Canada, 2,595 tons from Italy and 2,305 tons from France.

Nigeria

Rubber exports in July 1960 totalled 2,790 tons. The UK took 1,316 tons, Western Germany 561, Czechoslovakia 240, USA 160, Belgium-Luxemburg 25, and the Netherlands 22.

Crepe exports amounted to 2,368 tons of which 1,197 tons went to USA, and 908 tons to the UK.

Malaya

Malayan rubber exports in November amounted to 93,898 tons, according to preliminary figures issued by the Chief Statistician. This compares with 86,253 tons exported in October.

Quality Control

The fourth lecture in IRI Humberside's winter programme was given by M. A. Simmons, of Goodyear. T. Hall, chairman of the section, introduced Mr Simmons after first giving the members some details of the letters of appreciation received from visitors and guests to the Humberside foundation dinner and lecture.

Mr Simmons gave an extremely able and lucid lecture, illustrated with slides, based on his extensive experiences in the building up of a quality control department from scratch. The pitfalls and gains from a full quality control organization were clearly indicated. W. H. Cox expressed a vote of thanks.

REINFORCED PLASTICS PROGRESS Continued from page 1008

reinforced plastics for the manufacture of tools. This conjured up for many people the idea of easily manufactured experimental and production tools with great saving in time and money. However as many of these people were accustomed to working in metal, there were not a few failures in early attempts to produce such tools. It is generally accepted that due to the characteristics of the basic raw materials the operator can make or mar the properties of the final product if careful control is not exercised. Because of this arose the need for a link between raw material producer and end user whose job was to produce ready mixed formulations which were as foolproof as possible.

Mr Werrell dealt with the requirements for formulated compounds and with the development of specific applications in the tooling field. He looked forward to the firm establishment of formulators in this country and felt that they could play a large part in the extended use of these materials.

The third day of the conference was devoted to the report on the work of the structural design data sub-committee and on the outlook for the future, both of which were reported in *RJIP* December 10.

S. R. Badley, in his summing up, said that new uses of reinforced plastics had been described, in the chemical industry for large one-piece mouldings and in the manufacture of the vacuum chamber for the synchroton. Reinforced plastics were, he said, firmly established alongside of and competing with conventional materials. Knowledge was being built up and close co-operation was required between manufacturer, research departments and users to maintain the progress of the industry.

H. V. Blake endorsed this last remark and asked all manufacturers of reinforced plastics to join in the work of the British Plastics Federation by aiding the development of the plastics industry in design, research and marketing organization.

CORRESPONDENCE

Polymer Jargon

Sir,

I would like to comment on Charles Jenning's definitions under the heading 'Mean What You Say' (Views and Reviews December 10).

A diluent filler cannot be added to rubber without making it harder, whereas an extender would tend to soften or leave the hardness unaltered. Therefore, as far as rubber is concerned, a filler should be defined as a powder added in order to achieve a desired hardness. A reinforcing filler would do this without detriment to abrasion resistance, tensile or tear strength, or would substantially improve any one of these properties. Your definition of a filler would be more applicable to hard polymers or paints.

Also I would like to point out that 'modulus' is the *stress* at a specified elongation *(i.e.* load per unit cross-sectional area).

It would be very useful if polymer jargon was standardized in the form of a glossary compiled with reference to common industrial usage.

Yours faithfully,

L. R. BARKER.

Welwyn Garden City.

Charles Jennings writes: I know from experience that in advising a proposed definition of an existing term one can only hope to evoke discussion, and that it is wiser to leave it at that, like throwing a bone to a dog. But I want to thank Mr Barker for making an excellent point, one of the several which I, in fact, said could be made against my definition of 'filler.' Indeed, in one of my early drafts I called the whole thing 'flying a kite,' because I wanted to attract attention, comment, and discussion precisely for the reason which Mr Barker makes in his last sentence, a compilation of a glossary.

In English, there are to my knowledge, three official glossaries: an excellent publication by the ASTM, a British Standard (No. 1755:1951) entitled 'Glossary of Terms used in the Plastics Industry,' and now under revision, and a draft British Standard Glossary of Terms used in the Rubber Industry which was issued for comment early this year and is now in the final phases of consolidation before publication. I will see that Mr Barker's point is adequately reported to the BSI.

I am sure the committee will give it full consideration, though they may not adopt it because such a committee finds itself in a chain of difficulties. First it must decide what is the current usage in the industry, then it must decide whether to disentangle the illogicalities, then whether to accept the usage, illogicalities and all, and sometimes decide finally whether to prefer another term, to depricate the existing one, or to invent a new one.

Rubber Markets

LONDON

Reported Chinese and Russian buying at Singapore had a steadying effect on values early on. Covering by shorts enlivened the market temporarily, but trading was thin. Forward Terminal positions lost their recent small premium over near deliveries. Easiness ensued in a very quiet market. Factory demand was lacking and dealers were disinclined to operate pending some incentive.

Latest prices are as follows:

No. 1 RSS spot: 25¼d.-25½d.

Settlement House:

January 25½d.-25⅝d.
February 25⅝d.-25¾d.
March 25⅝d.-25¾d.
January/March 25½d.-25⅝d.
April/June 25⅝d.-25¾d.
July/September 25½d.-25⅝d.
October/December 25½d.-25⅝d.

No. 1 RSS cif basis ports:

December 25¼d.-25½d.
January 25¼d.-25½d.
February 25¼d.-25½d.

Godown:

January 85⅞ Straits cents nominal.

LATEX

Centrifuged 60% latex per gallon in drums, seller, December, January, 14s. 5d., cif European ports. Spot, seller, 14s. 11d. Bulk, seller, d.w. 14s. 4d. nominal. Creamed, seller, 14s. 2d. nominal, December, January. Normal, seller, December, January, 12s. 7d.

AMSTERDAM

The Amsterdam rubber market ruled as under on December 12.

	Guilders per kilo	
No. 1 RMA	Dec. 12	Previous
December ..	2.49	2.49
January	2.49	2.49
February ..	2.49	2.49
March	2.49	2.49
January/March ..	2.49	2.49
April	2.49	2.49

Sales: Nil. Tone: Quiet.

BANGKOK

No. 1 RSS

The price of No. 1 RSS at Bangkok on December 12 was 27.25 (27.25) US cents per lb.

DJAKARTA

On December 12 about 50 tons of sheet No. 1 were transacted at 31.25 to 32 rupiahs per kilo. The market closed quiet.

	Rupiahs per kilo	
	Dec. 12	Previous
Spot No. 1 priok ..	31.25b	31.00b
Spot No. 2 priok ..	30.25b	30.00b
Spot No. 3 priok ..	28.25b	28.00b
No. 1 fine pale crepe, spot	30.00b	30.00b

Tone: Quiet

SINGAPORE

Very quiet conditions prevailed throughout the morning of December 12. Interest in lower sheet was confined to No. 2 and 3 RSS for January shipments which have been traded in fair quantities. Offgrades were almost neglected. The market was quiet most of the afternoon and business was confined to switching December and January at a quarter of a cent differential. Lower sheets were in some demand. Transactions again consisted in switching at somewhat narrower differentials.

	Malayan cents per lb., fob Malayan ports to open ports	
	Dec. 12	Close
No. 1 RSS, Dec. ..	87 –87¼	86¾–87¼
Jan. ..	85¾–87	86¼–87
No. 2 RSS, Dec. ..	86 –86½	85¾–86½
No. 3 RSS, Dec. ..	84¼–84¾	84¼–85¼
No. 4 RSS, Dec. ..	82¼–83¼	82½–83½
No. 5 RSS, Dec. ..	75¼–76¼	75½–76½
No. 1 RSS, Spot ..	86¾–87¼	86¾–87¼
No. 3 blanket thick remilled crepe, Dec.	73 –74	73 –74
No. 1 fine pale crepe, Dec.	92 –93	91½–92½
2x thin brown crepe, Dec.	71 –72	71¼–72¼

Tone: Dull

The Industries Syndicate quote latex, native produce, 60% centrifugal, packed in rectangular drums, fob at 170.80d. per gallon.

NEW YORK

The New York rubber market ruled as under on December 12:

DEALERS' PRICES

	US cents per lb., ex-dock	
	Dec. 12	Previous
No. 1 RSS, Dec.	28⅛b–28⅜a	28⅛b–28⅜a
Jan.	28⅛b–28⅜a	28⅛b–28⅜a
No. 2 RSS, Dec.	28⅛b–28⅜a	28⅛b–28⅜a
Jan.	28⅛b–28⅜a	28⅛b–28⅜a
No. 3 RSS, Dec.	28⅛b–28⅜a	28⅛b–28⅜a
Jan.	28⅛b–28⅜a	28⅛b–28⅜a
No. 1 RSS, Spot	28⅜a	28⅜a
No. 3 amber blanket crepe, Dec.	25⅛n	25⅛n

FUTURES—REX CONTRACT

	Dec. 12	Prev. Close
Jan. ..	28.75b–28.95a	28.80b–28.90a
Mar. ..	28.75b–28.95a	28.90b–28.95a
May ..	28.80b–29.00a	28.95t
July ..	28.90b–29.05a	28.90b–29.00a
Sept. ..	28.90b–29.05a	28.90b–29.00a
Nov. ..	28.75b–29.00a	28.75n
Jan. ..	28.75n	28.75n

Sales: 2. Tone: Very quiet

Futures were steady in very quiet dealings on December 12. Only two lots were traded in a session shortened due to the snowstorm and the disruption of transport in the New York business area. Physical rubber was nominally unchanged.

CEYLON

No. 1 RSS

The price of No. 1 RSS at Colombo on December 12 was 97 (98) Ceylon cents per lb.

COMPANIES in the NEWS

BTR

Final dividend of BTR Industries is unchanged at 10%, but, coupled with the increased interim paid earlier, means that ordinary stockholders are having their total distribution raised 2½ points to 15%. Net profit of the group is sharply up at £468,671, compared with £328,953 previously, after a bigger tax provision of £425,207 (£250,182).

Accompanying these figures is a statement from the board that in view of expanding business it is proposed shortly to raise about £2m. by way of capital issues. Of this amount £1,500,000 will be found through an issue of debenture stock and the balance by a rights issue, on terms to be announced later.

Turner and Newall

A final dividend of 9½% on capital doubled by a scrip issue by Turner and Newall makes a total equivalent to 12% for the year to September 30 1960, compared with the forecast of 11¼% and with the 10% equivalent paid for the previous year.

Consolidated trading profit increased by £1.76m. to £13.64m., after depreciation.

With miscellaneous income, net, and after a tax charge increased by over £1m. to £7.17m., the net profit balance has risen from £6.87m. to £7.62m.

J. W. Nash

J. W. Nash and Co. Ltd., dealers in thermoplastic scrap and other materials, have moved temporarily to 21 Aylmer Road, London N.2. The company's Beethoven Street office and works were recently destroyed by fire.

Tyres almost twice as tall as a pretty girl have been made by Firestone in USA for six amphibious vehicles being built for the army. The four tyres on each vehicle require enough rubber for 600 passenger car tyres, and will support vehicles with load capacities of 100 tons each

Industry INTELLIGENCE

Technical Data

Robac TBZ

A recent addition to the range of rubber chemicals produced by Robinson Brothers Ltd., West Bromwich, is a low temperature peptizing agent—Robac TBZ (Zinc Thiobenzoate). A preliminary data sheet is available showing the effect of this agent on processing natural rubber compounds on the mill and in a Banbury mixer. Also given are the effects on the vulcanizing properties and physical properties of the vulacnizates.

The material has as yet only been evaluated in natural rubber, but work is proceeding on evaluation in various grades of synthetic rubber. At concentrations as low as 0.1%phr Robac TBZ is a very effective peptizing agent for natural rubber at low temperatures, particularly on the mill, has very little or no effect on the curing properties, no deleterious effects on the physical properties of the vulcanizate and does not stain or discolour.

Polysar SS-260

The range of self-reinforcing elastomers manufactured by Polymer Corporation has been extended, the latest addition being Polysar SS-260 which is a white, non-discolouring and non-staining copolymer of butadiene and styrene. This polymer has a higher degree of self-reinforcement than SS-250, is available in a free flowing flake form and is easily processed. It is recommended for use in soling, floor tiles, ebonite, household and sporting articles, and other applications requiring reinforcement, low gravity and ease of processing. Technical Report No. 9:9A available from Polymer (UK) Ltd., Walbrook House, Walbrook, London, E.C.4, compares the properties of compounds for these applications using Polysar SS-260, SS-250 and Kryflex 252, all of which are self-reinforcing products. From these it is possible to select a rubber with which to obtain the hardness and flex life required for a specific application.

Factice in SBR

In addition to functioning as a process aid and extender, factice can influence the vulcanization of SBR compounds enabling substantial savings in accelerator usage to be made. This was established by the Factice Research and Development Association (C. Falconer Flint, *RJIP* May 9 1959, 697.)

Bulletin 156/R/60 issued by Anchor Chemical Co. Ltd., Manchester 11, gives the results of laboratory work showing that the use of five parts of factice in an SBR tread compound permits the accelerator content to be reduced by 40%. This effects a saving in compound costs and confers the usual processing advantages associated with the use of factice.

Machines, Materials and Equipment

Stabilized Power Pack

A new power pack for general experimental work in any laboratory has been produced by W. G. Pye and Co. Ltd. The designers have taken into account all the exacting and constantly varying requirements which occur in laboratories such as their own. The instrument has been thoroughly tested over an extensive period and stability on all types of load, particularly capacitive loads, is ensured.

No electrolytic condensers are incorporated and all components have been carefully chosen for reliability and are conservatively rated. A comprehensive range of voltages can be supplied and all DC outputs are fully stabilized against supply and load variations.

DC outputs from 0 to 500v. are available, a fixed negative supply of −250v. and variable negative supply from 0 to −250v. all with less than 0.003v. ripple. In addition two separate AC supplies of 6.3v. at 5A are provided.

Publications

Maydown

Earlier this year the first neoprene plant in the UK went on stream at Maydown, Northern Ireland. Du Pont (UK) have now produced a booklet on the project giving background information.

The production process is illustrated and a number of applications of neoprene are dealt with.

Vyon Applications

Some of the main applications for which Vyon can be used, are detailed in a booklet published by Porous Plastics Ltd., Dagenham Dock, Essex.

Vyon is a porous material made from high density polythene of the Ziegler type and the permeability may be varied to suit different applications. It is light and flexible, very strong and is easy to machine and fabricate.

Applications for Vyon in the book include its use as a filter material for liquids and gases, the aeration of powders for conveying and dip coating, electrolytic diaphragms, and for orthopaedic splints and appliances. Since it is chemically inert as well as non-absorbent, it is of particular value to the food and chemical industries.

The booklet also contains data tables giving the examples of Vyon's permeability and full details of the sizes of sheets, rolls and tubes which are available.

A tuck-in flap on the inside of the back cover contains loose-leaf sheets which give specialized information on the use of Vyon for air and liquid filtration and air fluidized powder conveying.

New Ways with Rubber

An illustrated guide recently issued by the Department of the Scientific and Industrial Design describes some of the industrial uses of synthetic rubbers. This booklet has been prepared with the co-operation of the Rubber and Plastics Research Association of Great Britain, which at the time of preparation was still RABRM and is referred to as such.

Special-purpose synthetic rubbers intended for use where conditions would cause natural or general-purpose synthetics to deteriorate, are described, and their particular properties are given. A table at the back gives the general properties of vulcanized rubbers enabling a rapid selection of a material suitable for any set of conditions to be made The rubbers described are: silicones, fluorinated rubbers, chlorosulphonated polythene, nitrile, neoprene, polysulphide, butadiene styrene copolymers and polyurethane.

Copies of the booklet are available, free of charge, from DSIR, Charles House, 5-11 Regent Street, London, S.W.1.

Du Pont Elastomers

Elastomers Notebook 1960/16 produced by Du Pont describes recent applications and developments in the use of Neoprene, Hypalon and Viton. In the issue referred to are details of simulated service tests carried out on radiator hoses. The test apparatus (developed by Dayco Corporation) consists of a liquid circulating system provided with temperature and pressure controls in which test hoses may be ininstalled. Three hundred hours in this simulated service tester can be regarded as equivalent to several years' road use.

Applications of Du Pont elastomers described include the use of Neoprene decking in the Italian liner *Leonardo da Vinci*, Neoprene gaskets as a glazing cushion for shop-fabricated glass panels for building construction. Heavy duty shock mounts use Viton parts as this was the only rubber found capable of adequate mechanical performance at flex-induced temperatures as high as 300°C. and Hypalon hose is being used in a sulphuric acid plant and has been handling concentrations up to 93% for two years with entirely satisfactory results.

British Standards

Toughened Polystyrene Extruded Sheet (BS 3290:1960)

Industry's need for a standard for toughened polystyrene extruded sheet — mainly used in forming processes in manufacturing, particularly in the refrigerator industry — is met by the publication of this new British Standard.

Requirements are specified for two types of toughened polystyrene extruded sheet: the plain type and the type faced on one side with a thermoplastic foil.

Details are included of the required composition, dimensions with tolerances and physical properties. Methods of test specified are largely those described in BS 2782, Methods of Testing Plastics. BS 3290 is one of the marks required to appear on containers of sheet purporting to comply with the standard. BSI's well-known certification mark, The Kite, may also be applied if the manufacturer is licensed to use it.

Copies of this standard may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London, W.1, price 3s.

PVC Flooring

Two new British Standards are BS 3260:1960 for PVC (vinyl) Asbestos Floor Tiles and BS 3261: 1960 for Flexible PVC Flooring.

These specifications, prepared under the supervision of the Plastics Industry Standards Committee, give requirements for smooth surfaced homogeneous flooring materials which may be supplied in continuous lengths, or in tile form, and may be backed with hessian. Laminated tiles and tiles having an embossed surface are not covered.

Methods of test and requirements are given for many properties including colour fastness, dimensional stability, volatile material, curling, indentation, impact and resistance to various substances such as mineral and vegetable oils and sodium hydroxide solutions.

Copies of these standards may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London, W.1, price 4s. 6d. each.

Future Events

PI Midlands Section

The meetings of the PI Midlands section reinforced plastics group, given on page 22 of the Institute's programme booklet for 1960/61, will be held at the Sir Tatton Sykes Hotel, Wolverhampton, and not the Victoria Hotel.

Latest Wills

Mr John Joseph Lawler, of The Prince of Wales Hotel, Lord Street, Southport, accountant and director of Boro Rubber Co. (1912) Ltd., who died on March 11, left £51,819 gross, £49,416 net value.

Mr Alfred Pratt, of 231 Welland Park Road, Market Harborough, Leics., retired rubber hand, who died on September 21 last, left £2,095 gross, £1,995 net value.

TRADE MARKS

Objections to the registration of any of the undermentioned applications may be lodged with the Comptroller-General of Patents, Designs and Trade Marks at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, within one month of the date mentioned. The objections must be stated on Trade Marks Form No. 7, cost £2, obtainable through any money order office. The extracts—from 'The Trade Marks Journal'—given below are reproduced by permission of the Controller of H.M. Stationery Office.

RUBSTUDS (804,805) India-rubber studs for boots. Fussell's Rubber Co. Ltd., Knightstone Mills, Station Road, Worle, Weston-super-Mare, Somerset. (Class 25; November 9 1960.)

NYBRAX (806,894) Fasteners made of plastics for securing stair carpets. Alexander Stair Clips Ltd., Silverthorne Lane, Cradley Heath, Staffordshire. (Class 20; November 16 1960).

PEEBY (803,341) Devices made of plastics for use in securing in position tarpaulins, sheetings and the like. P. & B. Plastics Ltd., Waterloo Works, Gorsey Mount Street, Stockport, County of Lancaster. (Class 20; November 16 1960).

VITROFIL (802,562) Yarns, threads and fibres, all of glass and for textile purposes. Vitrofil S.p.A., Via Cernaia 8, Milan, Italy. Address for service is c/o McKenna and Co., 12 Whitehall, London, S.W.1. (Class 23; November 16 1960).

CRYSTALON (806,907) Plastics in the form of powders, pastes, liquids, emulsions, dispersions and granulates, all for industrial use. Trans Carbo Components Ltd., 28 Brazennose Street, Manchester, 2. (Class 1; December 7 1960).

FLOROFIX (808,583) Plastic-covered wire netting used for displaying flowers. Elaine Goddard Ltd., Discove, Brunton, Somerset. (Class 6; December 7 1960).

ROTOMATIC (808,507) Injection-moulding machines, and parts of such machines included in Class 7. Turner Machinery Ltd., Bramley, Leeds 13. (Class 7; December 7 1960).

NEW COMPANIES

Harold Glencross Ltd. (673,486). — October 27. Capital: £1,000 in £1 shares. To carry on the business of manufacturers, wholesalers and retailers of and dealers in tyres (both new and remoulded), agents for and dealers in batteries, etc. The first directors are: Harold F. Glencross and Esme Glencross, both of 2 Church Avenue, Harrogate. Regd. office: 2a Church Avenue, Harrogate.

Thistlethwaite and Co., Ltd. (673,557).— October 27. Capital: £12,000 in £1 shares. To acquire the business of a motor tyre and battery factor carried on by John Thistlethwaite at Bolton as Thistlethwaite and Co., etc. The permanent directors are: John Thistlethwaite, Elsie B. Thistlethwaite and David J. Thistlethwaite, all of 7 Ashbourne Avenue, Bolton. Regd. office: Burns Street, Bolton.

M. Wolchak Ltd. (673,600).—October 28. Capital: £100 in £1 shares. To carry on the business of manufacturers of and dealers in plastics, leather, etc. The first directors are to be appointed by the subscribers. Regd. office: 6 Surrey Street, W.C.2.

Multi-Plastics Ltd. (673,502).—October 27. Capital: £1,250 in £1 shares. To carry on the business of manufacturers and dealers in plastic materials. The first directors are: Raymond K. Jones, 49 Cae Leon, Merthyr Dyfan, Barry; Walter K. Peacock, 187 Court Road, Barry. Regd. office: 49 Cae Leon, Merthyr Dyfan, Barry.

Kinder and Janes Ltd. (672,600).— October 14. Capital: £1,000 in £1 shares. To carry on the business of chemical engineers, petroleum engineers, nuclear engineers, plastic manufacturers, electrical engineers, etc. The first directors are: Cecil V. Barratt, 18 Earlston Avenue, Denton, Manchester; George W. Kinder, Dytchleys, Castle Road, Woking; Peter J. A. Janes, 64 Swifts Green Road, Luton; Henry J. V. Charlton and Thomas S. Saul. Regd office: 30 St. Ann Street, Manchester, 2.

PATENT LIST

Printed copies of the Specifications in the following list, published by permission of the Controller of H.M. Stationery Office, can be obtained from the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, price 3s. 6d., including postage.

COMPLETE SPECIFICATIONS ACCEPTED

Open to public inspection on November 2 1960

Du Pont. Polytetrafluoroethylene granular powder. 853,338.

Ruhrchemie A.G. Process for the production of shaped parts of plasticized polyolefins. 853,194.

Collins & Aikman Corporation. Method of making foam backed carpet and foam backed carpet product. 853,353.

Petrochemicals Ltd. Preparation of fluorine-containing polymeric materials by the catalytic polymerization of fluorine-containing unsaturated compounds; and the resulting polymeric materials. 853,355.

Monsanto Chemicals Ltd. Rubber antidegradants. 852,932.

United States Rubber Co. Method of adhering butyl rubber to highly unsaturated rubbers. 853,215.

Stockholms Superfosfat Fabriks A.B. Polyacrylonitrile. 852,936.

Sandoz Ltd. Dyeing and printing process for polyacrylonitrile and acrylonitrile copolymer fibres. 853,217.

Esso Research & Engineering Co. Method of preparing high molecular weight linear hydrocarbon polymers. 853,010.

Siemens-Schuckertwerke A.G. Printing on plastic materials. 852,982.

Dow Chemical Co. Copolymers of styrene and methyl methacrylate. 853,239.

United States Rubber Co. Plastic boat and method of making same. 852,767.

United States Rubber Co. Methods of making gas-expanded elastomeric materials and products. 852,940.

Goodyear Tire & Rubber Co. Radiation resistant elastomeric articles. 853,219.

American Viscose Corporation. Vinylidene chloride-acrylonitrile copolymer solutions. 852,866.

Increases of Capital

Gemodels Ltd. (633,324). Modellers and plastic model manufacturers, etc., 2 The Waldrons, Croydon, Surrey. Increased on March 2 1960, by £300, in £1 shares, beyond the registered capital of £200.

Peterborough Tyre Co. Ltd. (327,718). Geneva Street, Peterborough.—Increased on March 17 1960, by £9,000, in £1 ordinary shares, beyond the registered capital of £1,000.

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Printed in Great Britain by F. J. PARSONS, Ltd., London and Hastings, and published by the Proprietors, MACLAREN & SONS, LTD., Maclaren House, 131 Great Suffolk Street, London, S.E.1